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A DTE Energy Company

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U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington DC 20555

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) Appendix A, Facility Operating License No. NPF-43, Technical Specifications 5.6.2, and 5.6.3

Subject: Annual Radioactive Effluent Release and Radiological Environmental Operating Reports

The 2001 Annual Radioactive Effluent Release and Radiological Environmental Operating Reports for Fermi 2 are enclosed. This combined report is being transmitted in accordance with Reference 2 and Regulatory Guide 1.21, Revision 1. The attached report covers the period from January 1, 2001 through December 31, 2001.

Should you have any questions regarding this report, please contact Dan Craine, Supervisor, Radiological Engineering, at (734) 586-1516.

Sincerely,

William O'Connor

Enclosure

cc: T. J. Kim
M. A. Ring
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

IE48
IE25

FERMI 2 NUCLEAR POWER PLANT

DETROIT EDISON COMPANY

OPERATING LICENSE NO. NPF - 43

Fermi 2 - 2001 Annual
Radioactive Effluent Release and
Radiological Environmental Operating Reports

for the period of
January 1, 2001 through December 31, 2001

Prepared by:

Fermi 2
Radiological Engineering

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Executive Summary

This report is published to provide information regarding effluent and radiological environmental monitoring at the Fermi 2 Nuclear Power Plant. The 2001 Annual Radioactive Effluent Release and Radiological Environmental Operating Reports cover the period from January 1, 2001 through December 31, 2001.

The Radioactive Effluent Release and Radiological Environmental Operating Report is produced annually, as required by the Nuclear Regulatory Commission, to present detailed results of careful monitoring and measuring of radiation in the environment around the plant. This report also includes details of the independent oversight incorporated into the Radiological Effluent and Environmental Monitoring Programs to ensure program accuracy.

This report describes both the continual environmental radiation and effluent monitoring of plant systems. Both types of monitoring indicate that the operation of Fermi 2 does not result in exposure of people or the environment surrounding Fermi 2 and therefore is well below the levels set by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA).

There were no releases of liquid radioactive effluents from Fermi 2 in 2001. In fact, there has not been a liquid radioactive discharge from Fermi 2 since 1994. In addition there were no fuel leaks during 2001.

In 2001, due to noble gases, the gamma air dose was 0.02 mrad and beta air dose was 0.01 mrad at the site boundary. These doses each represent 0.2% and 0.05% of the respective 10CFR50 gamma and beta annual air dose limits.

The highest potenial single organ dose to a person living offsite due to iodines and particulates released from the plant was calculated to be 0.5 mrem, which is 3% of the applicable 10 CFR 50 limit.

Also during 2001, there was no measurable direct radiation dose due to Fermi 2 above natural background beyond the site boundary as shown by offsite TLD readings. The offsite dose due to effluents is an extremely small fraction of the 40 CFR 190 limits. Therefore, Fermi 2 was in compliance with 40 CFR 190 in 2001.

In conclusion, environmental samples show no radioactivity attributable to the operation of Fermi 2. The results of environmental sampling show that radioactivity levels have not increased from background radioactivity detected prior to the operation of Fermi 2. The operation of Fermi 2 continues to have no measurable radiological impact upon the environment.

Introduction

During the normal operation of a nuclear power plant, most of the fission products are retained within the fuel and fuel cladding. However, small amounts of radioactive fission products and trace amounts of the component and structure surfaces which have been activated are present in the primary coolant water. The four types of radioactive material released are noble gases, iodine, particulates, and tritium.

Noble Gases

Some of the fission products released in airborne effluents are radioactive radionuclides of noble gases, such as xenon and krypton. These noble gases are released continuously at low levels while the reactor is operating, and releases may be increased when the reactor is depressurized or when there are leaks in the fuel cladding. Noble gas releases to the environment are reduced by plant systems which delay release of these gases from the plant, which allows a portion of the noble gas activity to decay within plant systems after it is released from the fuel.

Noble gases are biologically and chemically nonreactive. They do not concentrate in humans or other organisms. They contribute to human radiation dose by being an external source of radiation exposure to the body. They are readily dispersed in the atmosphere. In 2001, xenon-135, was detected in gaseous effluent samples. The half life of xenon-135 is 9 hours.

Iodines and Particulates

Fermi 2 is required to calculate offsite dose due to releases of iodine-131 and iodine-133, which are radioisotopes of iodine with half lives of 8 days and 1 day, respectively, and particulates with half-lives greater than 8 days in gaseous and liquid effluents. The principal radioactive particulates released are fission products (e.g., cesium-134 and cesium-137) and activation products (e.g., cobalt-58 and cobalt-60). Annual releases of these radionuclides are small. Factors such as their high chemical reactivity and solubility in water, combined with the high efficiency of gaseous and liquid processing and radwaste systems, minimize their discharge.

The main contribution of radioactive iodine to human dose is to the thyroid gland, where the body concentrates iodine, resulting from inhalation or ingestion of these iodines. Radioactive cesiums and cobalts, when ingested or inhaled, contribute to radiation exposure of tissues such as the muscle, liver, and intestines. These iodines and particulates are also a source of external radiation exposure if deposited on the ground.

Tritium

Tritium, a radioactive isotope of hydrogen, is the predominant radionuclide in liquid effluents. It may also be present in gaseous effluents, but it has usually been at such low levels that it has been below detection limits in gaseous effluent samples at Fermi 2. Tritium is produced in the reactor coolant as a result of neutron interaction with deuterium (also a hydrogen isotope) present in the water, and it is also a fission product.

Plant Effluent Monitoring

Effluents are strictly controlled to ensure that radioactivity released to the environment is as low as reasonably achievable and does not exceed regulatory limits. Effluent control includes the operation of monitoring systems, in-plant and environmental sampling and analyses programs, quality assurance programs for effluent and environmental programs, and procedures covering all aspects of effluent and environmental monitoring.

The radioactive waste treatment systems at Fermi 2 are designed to collect, process, and/or delay the release of liquid and gaseous wastes which contain radioactivity. For example, the 2.0 and 2.2 minute holdup pipes delay the release of radioactive gases so that radioactive decay can occur prior to release. The offgas system provides additional delay for such gases.

Radioactivity monitoring systems are used to ensure that all releases are below regulatory limits. These instruments provide a continuous indication of the radioactivity present at the release points. Each instrument is equipped with alarms and indicators in the control room. The alarm setpoints are low enough to ensure that applicable limits will not be exceeded. In some cases these alarms restrict the release. For example, if the liquid radwaste effluent monitor alarms, a release in progress is automatically stopped. Also, several alarms cause building ventilation systems to be shut down and/or gaseous releases to be diverted to the standby gas treatment system.

All wastes are evaluated to identify the specific concentrations of radionuclides being released. Sampling and analysis provide a more sensitive and precise method of determining effluent composition than monitoring instruments.

A meteorological tower is located on the Fermi 2 site. It is linked to computers which record the meteorological data. This data is used in calculating dispersion and deposition factors, which are essentially dilution factors between plant release points and points offsite. Coupled with the effluent release data, these factors are used to calculate dose to the public.

Beyond the plant, devices maintained in conjunction with the Radiological Environmental Monitoring Program constantly sample the air in the surrounding environment. Frequent samples of other environmental media, such as water and vegetation, are also taken to determine if buildup of deposited radioactive material has occurred in the area.

Exposure Pathways to People

Radiological exposure pathways define the methods by which people may become exposed to radioactive material. The major pathways of concern are those which could cause the highest calculated radiation dose. These projected pathways are determined from the type and amount of radioactive material released, the environmental transport mechanism, and the use of the environment. The environmental transport mechanism includes consideration of physical factors, such as the hydrological (water) and meteorological (weather) characteristics of the area.

An important factor in evaluating the exposure pathways is the use of the environment. This is evaluated in the annual Land Use Census. Many factors are considered, such as the locations of homes, gardens, and milk or meat animals in the area.

The release of radioactive gaseous effluents involves pathways such as external whole body exposure, deposition of radioactive material on plants, deposition on soil, inhalation and ingestion by animals raised for human consumption, and inhalation by humans. The release of radioactive material in liquid effluents involves pathways such as drinking water and fish consumption.

Although radionuclides can reach humans by many different pathways, some result in greater dose than others. The most significant pathway is the exposure pathway which will provide the greatest dose to a population, or to a specific individual. Identification of the most significant pathway depends on the radionuclides involved, the age and diet of the individual, and the location of the individual's residence. The doses calculated may be delivered to the whole body or to a specific organ. The organ receiving the greatest fraction of the dose is important in determining compliance with dose limits.

Dose Assessment

Dose is energy deposited by radiation in an exposed individual. Whole body exposure to radiation involves the exposure of all organs. Most exposures due to external sources of radiation are of this type. Both non-radioactive and radioactive elements can enter the body through inhalation or ingestion. When they do, they are usually not distributed evenly. For example, iodine concentrates in the thyroid gland, cesium collects in muscle and liver tissue, and strontium collects in bone tissue.

The total dose to organs from a given radionuclide depends on the amount of radioactive material present in the organ and the amount of time that the radionuclide remains in the organ. Some radionuclides remain for very short times due to their rapid radioactive decay and/or elimination rate from the body, while other radionuclides may remain in the body for longer periods of time. Also the form of the radionuclide (soluble vs. insoluble) and the method of uptake also influence residence times in the body.

The dose to the general public in the area surrounding Fermi 2 is calculated for periods of gaseous release and for each liquid release. The dose due to radioactive material released in gaseous effluents is calculated using factors such as the amount of radioactive material released, the concentration beyond the site boundary, the locations of exposure pathways (cow milk, goat milk, vegetable gardens and residences), and usage factors (inhalation, food consumption). The dose due to radioactive material released in liquid effluents is calculated using factors such as the total volume of liquid, the total volume of dilution water, near field dilution, and usage factors (water and fish consumption). These calculations produce a conservative estimation of the dose.

The **Radiological Environmental Monitoring Program (REMP)** was established at Fermi 2 for several reasons: to provide a supplementary check on the effluent controls, to assess the radiological impact of the plant's operation on the surrounding area, and to determine compliance with applicable radiation protection guides and standards. The REMP was established in 1978, seven years before the plant became operational. This **preoperational surveillance program** was established to describe and quantify the radioactivity, and its variability, in the area prior to the operation of Fermi 2. After Fermi 2 became operational in 1985, the **operational surveillance program** continued to measure radiation and radioactivity in the surrounding areas.

A variety of environmental samples are collected as part of the REMP at Fermi 2. The selection of sample types is based on the established pathways for the transfer of radionuclides through the environment to humans. The selection of sampling locations is based on sample availability, local meteorological and hydrological characteristics, local population characteristics, and land usage in the area of interest. The selection of sampling frequencies for the various environmental media is based on the radionuclides of interest, their respective half-lives, and their behavior in both the biological and physical environment.

Preoperational Surveillance Program

The federal government requires nuclear facilities to conduct radiological environmental monitoring prior to constructing the facility. This preoperational surveillance program is aimed at collecting the data needed to identify pathways, including selection of the radioisotope and sample media combinations to be included in the surveillance program conducted after facility operation begins. Radiochemical analyses performed on the environmental samples should include not only those nuclides expected to be released during facility operation, but should also include typical radionuclides from nuclear weapons testing and natural background radioactivity. All environmental media with a potential to be affected by facility operation, as well as those media directly in the major pathways, should be sampled on at least an annual basis during the preoperational phase of the environmental surveillance program.

The preoperational surveillance design, including nuclide/media combinations, sampling frequencies and locations, collection techniques, and radioanalyses performed, should be carefully considered and incorporated in the design of the operational surveillance program. In this manner, data can be compared in a variety of ways (for example: from year to year, location to location, etc.) in order to detect any radiological impact the facility has on the surrounding environment. Data collection during the preoperational phase should be planned to provide a comprehensive database for evaluating any future changes in the environment surrounding the nuclear facility.

Fermi 2 began its preoperational environmental surveillance program seven years before the plant began operating in 1985. Data accumulated during those early years provide an extensive database from which environmental monitoring personnel are able to identify trends in the radiological characteristics of the local environment. The environmental surveillance program at Fermi 2 will continue after the plant has reached the end of its economically useful life and decommissioning has begun.

Operational Surveillance Program Objectives

The operational phase of the environmental surveillance program at Fermi 2 was designed with the following objectives in mind:

- to determine whether any significant increase occurs in the concentration of radionuclides in major pathways;
- to identify and evaluate the buildup, if any, of radionuclides in the local environment, or any changes in normal background radiation levels;
- to verify the adequacy of the plant's controls for the release of radioactive materials;
- to fulfill the obligations of the radiological surveillance sections of Fermi 2's Offsite Dose Calculation Manual.

Program Overview

The Radiological Environmental Monitoring Program (REMP) at Fermi 2 is conducted in accordance with Title 10, Code of Federal Regulations, Part 50; Regulatory Guide 4.8; the Fermi 2 Offsite Dose Calculation Manual (ODCM) and plant operating procedures. Samples are collected either weekly, monthly, quarterly, semiannually, or annually, depending upon the sample type and nature of the radionuclides of interest. Environmental samples collected by Fermi 2 personnel are divided into four general types:

- **direct radiation** -- measured by thermoluminescent dosimeters (TLDs).
- **atmospheric** -- including samples of airborne particulates and airborne radioiodine.
- **terrestrial** -- including samples of milk, groundwater, and broad leaf vegetation.
- **aquatic** -- including samples of drinking water, surface water, fish, and shoreline and bottom sediments.

REMP samples are collected onsite and offsite up to 20 miles away from the plant. Sampling locations are divided into two general categories: **indicator** and **control**. Indicator locations are those which would be most likely to display the effects caused by the operation of Fermi 2. Generally, they are located within ten miles of the plant. Control locations are those which should be unaffected by plant operations. Typically, these are more than ten miles away from the plant. Data obtained from the indicator locations are compared with data from the control locations. This comparison allows REMP personnel to take into account naturally occurring background radiation or fallout from weapons testing in evaluating any radiological impact Fermi 2 has on the surrounding environment. Data from indicator and control locations are also compared with preoperational data to determine whether significant variations or trends exist.

Sample Analysis

When environmental samples are analyzed, several types of measurements may be performed to provide information about the radionuclides present. The major analyses that are performed on environmental samples collected for the Fermi 2 REMP include:

Gross beta analysis measures the total amount of beta emitting radioactive material present in a sample. Beta radiation may be released by many different radionuclides. Since beta decay gives a continuous energy spectrum rather than the discrete lines or "peaks" associated with gamma radiation, identification of specific beta emitting nuclides is much more difficult. Therefore, gross beta analysis only indicates whether the sample contains normal or abnormal concentrations of beta emitting radionuclides; it does not identify specific radionuclides. Gross beta analysis merely acts as a tool to identify samples that may require further analysis.

Gamma spectral analysis provides more specific information than does gross beta analysis. Gamma spectral analysis identifies each gamma emitting radionuclide present in the sample, and the amount of each nuclide present. Each radionuclide has a very specific "fingerprint" that allows for swift and accurate identification. For example, gamma spectral analysis can be used to identify the presence and amount of iodine-131 in a sample. Iodine-131 is a man-made radioactive isotope of iodine that may be present in the environment as a result of fallout from nuclear weapons testing, routine medical, or routine releases from nuclear power stations.

Tritium analysis indicates whether a sample contains the radionuclide tritium (H-3) and the amount present. Tritium is an isotope of hydrogen that emits low energy beta particles.

Strontium analysis identifies the presence and amount of strontium-89 and strontium-90 in a sample. These man-made radionuclides are found in the environment mainly as a result of fallout from nuclear weapons testing. Strontium is usually incorporated into the calcium pool of the biosphere. In other words, strontium tends to replace calcium in living organisms and becomes incorporated in bone tissue. The principle strontium exposure pathway is via milk produced by cattle grazed on pastures exposed to deposition from airborne releases.

Gamma Doses measured by thermoluminescent dosimeters while in the field are determined by a special laboratory procedure.

Often samples will contain little radioactivity, and may be below the lower limit of detection for the particular type of analysis used. The lower limit of detection (LLD) is the smallest amount of sample activity which can be detected with a reasonable degree of confidence, at a predetermined level. When a measurement of radioactivity is reported as less than LLD (<LLD), it means that the radioactivity is so low that it cannot be accurately measured with any degree of confidence by that particular method for an individual analysis.

Many radionuclides are present in the environment due to sources such as cosmic radiation and fallout from nuclear weapons testing. Some of the radionuclides present are:

- **tritium,** present as a result of the interaction of cosmic radiation with the upper atmosphere, as a result of routine release from nuclear facilities, and due to fallout from past atmospheric nuclear weapons testing.

- **beryllium-7,** present as a result of the interaction of cosmic radiation with the upper atmosphere.

- **cesium-137,** a man-made radionuclide which has been deposited in the environment, (for example, in surface soils) as a result of fallout from nuclear weapons testing and routine releases from nuclear facilities.

- **potassium-40,** a naturally occurring radionuclide normally found throughout the environment (including humans)

- **fallout radionuclides** from nuclear weapons testing, including strontium-89, strontium-90, cesium-137, cerium-141, cerium-144, and ruthenium-106. These radionuclides may also be released in minute amounts from nuclear facilities

The radionuclides listed above are expected to be present in many of the environmental samples collected in the vicinity of the Fermi 2. The contribution of radionuclides from the operation of Fermi 2 is assessed by comparing sample results with preoperational data, operational data from previous years, control location data, and the types and amounts of radioactivity normally released from the Fermi 2 in liquid and gaseous effluents.

Quality Assurance

An important part of the environmental monitoring program at Fermi 2 is the **Quality Assurance Program (QA).** It is conducted in accordance with the guidelines specified in NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs." The QA program is designed to identify possible deficiencies in the REMP so that corrective actions can be initiated promptly. Fermi 2's Quality Assurance program also provides confidence in the results of the REMP through:

- performing regular audits (investigations) of the REMP, including a careful examination of sample collection techniques and record keeping;

- performing audits of the vendor laboratory which analyzes the environmental samples;

- requiring the analytical vendor laboratory to participate in an approved Cross-Check Program;

- splitting samples prior to analysis by an independent laboratory, and then comparing the results for agreement, and, finally;

- requiring the analytical laboratory to perform in-house spiked sample analyses.

QA audits and inspections of the Fermi 2 REMP are performed by Fermi 2's QA department and the NRC, respectively. In addition, the NRC also performs independent environmental monitoring in the vicinity of Fermi 2. The types of samples collected and the sampling locations used by the NRC were incorporated into Fermi 2's REMP. Hence, the analytical results from the different programs can be compared. This practice of comparing results from identical samples, collected and analyzed by different parties, provides a valuable tool to verify the quality of the laboratory's analytical procedures and the data generated.

Radioactive Effluent Monitoring Results

This section summarizes the results of effluent monitoring and offsite dose calculation for the year 2001, as well as a listing of radioactivity contained in Fermi 2 waste shipped for burial. Calculations of offsite doses are compared with Nuclear Regulatory Commission limits, and these limits are summarized in Appendix E. Appendix E also contains a detailed discussion of the methods used to determine quantities of radioactivity released in effluents, the types of solid radwaste, as well as tables of individual radionuclides released in effluents and shipped as solid radwaste.

There were no releases of liquid radioactive effluents from Fermi 2 in 2001. In fact, there has not been a liquid radioactive discharge from Fermi 2 since 1994. The 2001 gaseous effluent releases are summarized in the following tables. There were no abnormal releases of radioactive material, i.e. releases not performed in accordance with the Fermi 2 license and implementing procedures, in 2001.

The data in the following tables represent continuous and batch releases, however batch gaseous releases (containment purges) did not contribute significantly to the totals. In 2001, there were 2 containment purges in which radioactivity was detected. Based on recorded start and stop times, the shorter purge lasted 1457 minutes and the longer lasted 3480 minutes. The total recorded duration of these purges was 4937 minutes, the average duration was 2469 minutes, and the median duration was 2469 minutes.

Note that 3 values in the tritium summary table are preceded by the "less than" symbol. These values represent the lower limit of detection (LLD) in units of microcuries per cubic centimeter (uCi/cc) for individual samples, and indicate that tritium was not detected in gaseous effluent samples in 3 of the 4 quarters of 2001.

Table 1 - Fission and Activation Gases (Noble Gases) Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Total Release (curies)	2.60E+01	1.47E+01	2.20E+01	8.20E-02
Average Release Rate for Period (μCi/sec)	3.34E+00	1.87E+00	2.77E+00	1.03E-02

Table 2 - Radioiodines Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Total I-131 (curies)	4.64E-03	5.53E-03	6.85E-03	5.09E-03
Average Release Rate for Period (µCi/sec)	5.96E-04	7.04E-04	8.62E-04	6.40E-04

Table 3 - Particulates Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Particulates with half lives > 8 days (curies)	1.79E-03	4.04E-03	9.29E-04	1.45E-03
Average Release Rate for Period (µCi/sec)	2.30E-04	5.14E-04	1.17E-04	1.82E-04
Gross Alpha Radioactivity (curies)	2.30E-06	1.47E-06	1.46E-06	8.41E-07

Table 4 - Tritium Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Total Release (curies)	<4.0E-08	<4.0E-08	1.31E+00	<4.0E-08
Average Release Rate for Period (µCi/sec)	N.A.	N.A.	1.65E-01	N.A.

The offsite dose impact of the above releases was evaluated by calculating organ doses to the most highly exposed individual living near the plant due to I-131, I-133, tritium, and particulates with half lives greater than 8 days. This exposure is assumed to be occurring via the pathways of inhalation, vegetation ingestion, and direct radiation from material deposited on the ground. The results of this calculation are shown in the following table:

Table 5

Organ	2001 Gaseous Effluent Dose to Receptor with Highest Single Organ Dose
Bone	0.02 mrem
Liver	0.005 mrem
Thyroid	0.5 mrem
Kidney	0.006 mrem
Lung	0.003 mrem
GI-LLI	0.004 mrem
Total body	0.004 mrem

The highest single organ dose is 0.5 mrem to the thyroid. This is 3% of the federal limit of 15 mrem specified in 10CFR50, Appendix I.

Another dose calculation performed on the above release data is that for gamma and beta air dose at the site boundary due to noble gases. In 2001, gamma air dose was 0.02 mrad and beta air dose was 0.01 mrad. These doses represent 0.2% of the 10CFR50 gamma annual air dose limit and 0.05% of the annual beta air dose limit. (The gamma dose limit is 10 mrad and the beta dose limit is 20 mrad.)

Title 40, Part 190 of the Code of Federal Regulations requires that dose to an individual in the unrestricted area from the uranium fuel cycle, including direct radiation dose, be limited to 25 mrem/year to the total body and 75 mrem/year to the thyroid. During 2001, there was no measurable direct radiation dose beyond the site boundary as shown by offsite TLD readings. Also, offsite dose due to effluents is an extremely small fraction of the 40 CFR 190 limits. Therefore, Fermi 2 was in compliance with 40 CFR 190 in 2001.

Potential dose to visitors at Fermi 2 due to all radioactive effluents, including noble gases, was also calculated. The ODCM considers persons visiting the Fermi 2 Visitors Center (4 hours/year), and persons ice fishing on Lake Erie near the plant (240 hours/year), to be visitors. Using ODCM assumptions about these categories of visitors, the maximum potential dose to a visitor to Fermi 2 in 2001 was 0.02 mrem to the maximally exposed organ (thyroid) and 0.003 mrem to the total body.

Also, the dose to the entire population within a fifty mile radius of Fermi 2 (about 6 million people) was calculated. This dose was estimated to be less than one person-rem for 2001. This dose is insignificant compared to the background radiation dose to this population of approximately 1.8 million person-rem.

The radioactivity and volume of Fermi 2 solid waste received at the Barnwell, SC, burial facility in 2001 is summarized in the following table.

Table 6 - Solid Waste Received At Barnwell, SC

Type of waste	Unit	12 month period	Est. total activity error, %
Spent resins, sludges, etc.	m^3 curies	4.29E+01 1.70E+01	± 25
Dry compressible waste, contaminated equipment, etc.	m^3 curies	3.05E+01 8.82E+00	± 25
Irradiated components, control rods, etc.	m^3 curies	0 0	NA
Other	m^3 curies	0 0	NA

Radioactive solid waste shipments from Fermi 2 in 2001 are summarized in the following table.

Table 7 - Solid Waste Shipments

Type of shipment/ solidification process	Number of shipments	Mode of transportation	Destination
Spent resin, sludges, etc.	6	tractor trailer with cask	Chem Nuclear, Barnwell, SC
Dry compressible waste, contaminated equipment, etc.	2	tractor trailer	Duratek

No revisions to the ODCM were implemented in 2001. In 2001, no liquid or gaseous effluent monitoring instrumentation was out of service longer than the time limits specified in the ODCM. Also, no outside temporary tank exceeded the 10 curie content limit, and there were no major changes to radioactive waste systems in 2001.

Radiological Environmental Monitoring Program Results

Direct Radiation Monitoring

Radiation is a normal component of the environment resulting primarily from natural sources, such as cosmic radiation and naturally occurring radionuclides; and to a lesser extent, from manmade sources such as fallout from past nuclear weapons testing. The earth is constantly bombarded by cosmic radiation in the form of high energy gamma rays and particulates. The earth's crust also contains natural radioactive material, such as uranium and potassium-40, which contributes to the background radiation. Direct radiation monitoring primarily measures ionizing radiation from cosmic and terrestrial sources.

Thermoluminescent Dosimeters

Detroit Edison uses thermoluminescent dosimeters (TLDs) to measure direct gamma radiation in the environs of Fermi 2. Thermoluminescence is a process by which ionizing radiation interacts with a phosphor which is the sensitive material in the TLD. Energy is trapped in the TLD material and can be stored for several months or years. This provides an excellent method to measure the dose received over long periods of time. The energy that was stored in the TLD as a result of interaction with radiation is released and measured by a controlled heating process in a calibrated reading system. As the TLD is heated, the phosphor releases the stored energy in the form of light. The amount of light detected is directly proportional to the amount of radiation to which the TLD was exposed. This reading process then rezeros the TLD and prepares it for reuse.

Fermi 2 has 67 TLD locations within a 15 mile radius of the plant. Of the 67 TLD locations 18 are located on-site and are not used for comparison with the control locations. The TLDs are thoroughly tested to comply with NRC Regulatory Guide 4.13 and American National Standards Institute's (ANSI) publication N545-1975, which assure accurate measurements under varying environmental conditions before being placed in the field. Indicator TLDs are located within a ten mile radius of the plant and control TLDs are located at a distance that is outside the influence of the plant. While in the field, TLDs are exposed to background radiation and, if measurable, gaseous effluents and direct radiation from Fermi 2. Environmental TLDs are exchanged and processed on a quarterly basis. The TLDs' data are reported in terms of milliroentgen per standard quarter (mR/std qtr), a standard quarter being 91 days. Regardless of the duration of TLD exposure in the field, the data have been normalized to a standard quarter to allow convenient intercomparisons with the net value.

In 2001, the average exposure for TLDs at all off-site indicator locations was 14.2 mR/std qtr and for all control locations was 13.6 mR/std qtr. These exposures are consistent with preoperational and past operational measurements as shown in Figure 1.

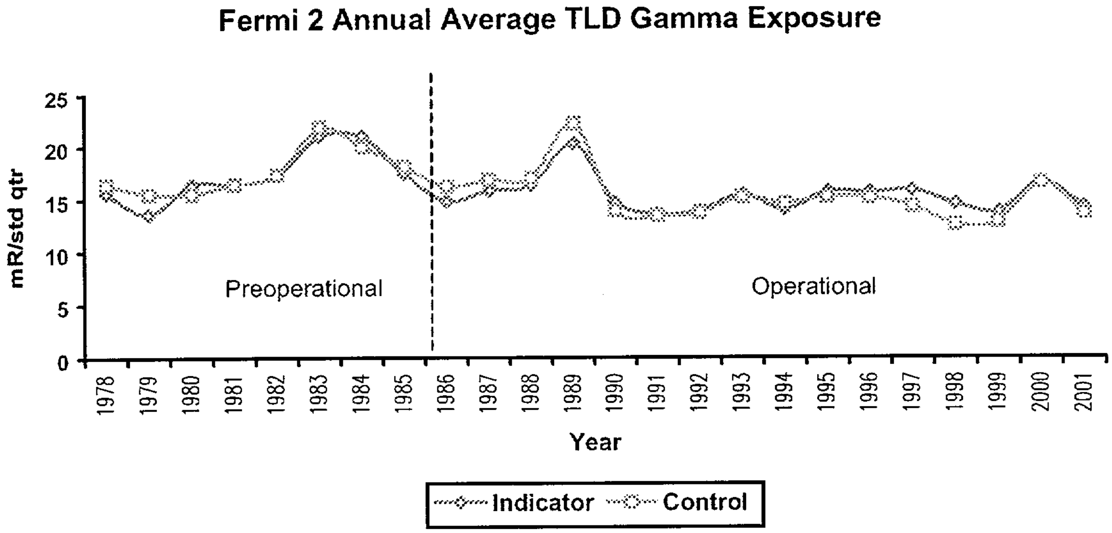

Figure 1 - Fermi 2 Annual Average TLD Gamma Exposure; The similarity between indicator and control results demonstrates that the operation of Fermi 2 has not caused any abnormal gamma exposure.

Atmospheric Monitoring

A potential exposure pathway to people is inhalation of airborne radioactive materials. Detroit Edison continuously samples the ambient air surrounding Fermi 2 for radioactivity. Air sampling began in 1979, during the preoperational program. At each sampling location, a mechanical air sampler is used to draw a continuous volume of air through two filters designed to collect particulates and radioiodines. Air samples are collected weekly and analyzed for gross beta radiation and iodine-131 gamma radiation. The particulate filters for each sampling location are combined on a quarterly basis to form a "composite sample" and are analyzed for gamma emitting radionuclides. There are four indicator sampling locations which were selected based on an evaluation of the predominant wind directions. A fifth sampling location is approximately 14 miles west of the plant and is considered to be in a location unaffected by the operation of the plant. This is used as the control location.

Air Sampling

On October 16, 1980, the Peoples Republic of China conducted an atmospheric nuclear weapon test. The fallout from this test was detected in Fermi 2 preoperational environmental air samples in 1981 (see Figure 2). The average gross beta for 1981 was 1.60E-1 pCi/cubic meter for indicator samples and 2.40E-1 pCi/cubic meter for control samples which was a factor of ten times greater than background gross beta. Gamma spectroscopic analyses of the particulate filters indicated cesium-137, cerium-141, cerium-144, ruthenium-103, ruthenium-106, zirconium-95, niobium-95, manganese-54, and antimony-125 in the atmosphere as a result of this test. In 1986, as shown in Figure 2, there was a slight increase in gross beta activity and a 2.70E-1 pCi/cubic meter "spike" in the iodine-131 activity. These elevated levels in 1986 are attributed to the nuclear accident at Chernobyl on April 26, 1986. For all other years, the iodine-131 activity was below the lower limit of detection (LLD) of 7.0E-2 pCi/cubic meter.

During 2001, two hundred and fifty-six (256) particulate air filters and charcoal cartridges were collected and analyzed for gross beta activity and iodine-131 respectively. The average gross beta for indicator samples was 2.62E-2 pCi/cubic meter and 2.52E-2 pCi/cubic meter for control samples. None of the charcoal filters collected showed detectable levels of iodine-131. The following table contains the annual average gross beta results of all five sample locations for 2001.

2001 Average Gross Beta Concentrations in Air Particulates
(pCi/m^3)

Table 8

Station	Description (sector/distance)	Annual Average
API-1 (I)	Estral Beach (NE/1.4 mi.)	2.58E-2
API-2 (I)	Site Boundary (NNW/0.6 mi.)	2.78E-2
API-3 (I)	Site Boundary (NW/0.6 mi.)	2.49E-2
API-4 (C)	North Custer Rd. (W/14 mi.)	2.52E-2
API-5 (I)	Erie St. (S/1.2 mi.)	2.62E-2

(I) = Indicator Station (C) = Control Station

Twenty (20) quarterly particulate filter composites were prepared and analyzed for gamma emitting radionuclides. Naturally occurring beryllium-7 was detected in both indicator and control samples.

In conclusion, the atmospheric monitoring data are consistent with preoperational and prior operational data and show no adverse long-term trends in the environment attributable to operation of Fermi 2 as illustrated in Figures 2 and 3.

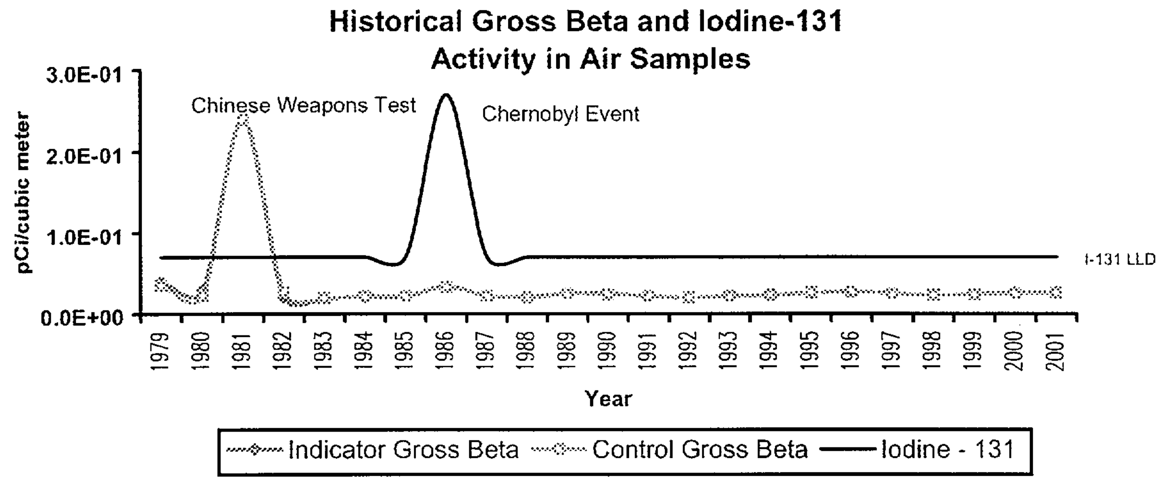

Figure 2 - Historical Gross Beta and Iodine-131 Activity in Air Samples; The similarity between indicator and control gross beta results demonstrates that the operation of Fermi 2 has had no adverse long-term trends in the environment. The lower limit of detection (LLD) for iodine-131 is 0.07 pCi/cubic meter.

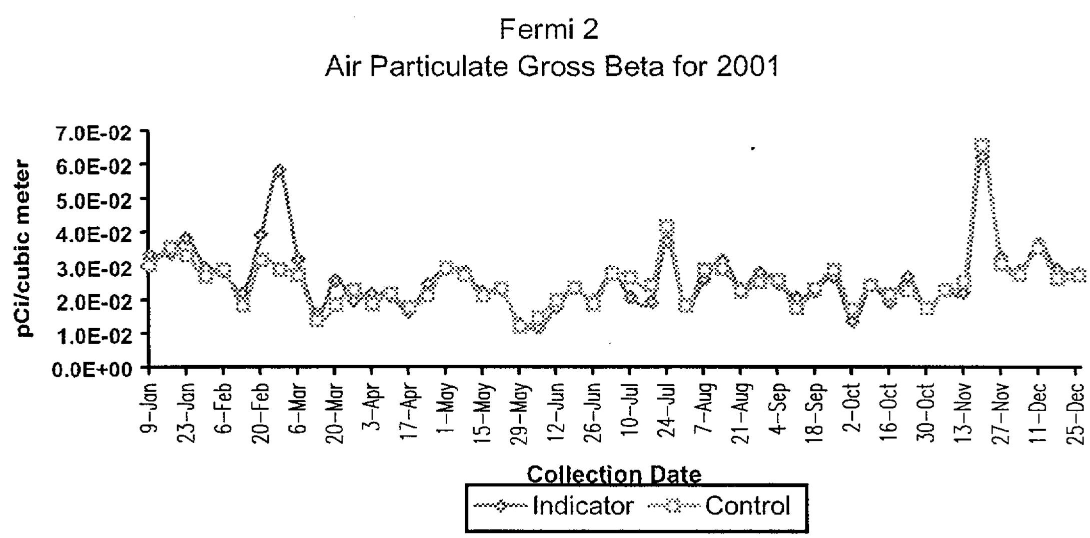

Figure 3 - Fermi 2 Air Particulate Gross Beta for 2001; The concentration of beta emitting radionuclides in airborne particulates samples was essentially identical at indicator and control locations. Gross beta activity varies throughout the year and is primarily an effect of seasonal precipitation.

Terrestrial Monitoring

Radionuclides released to the atmosphere may deposit on soil and vegetation, and therefore, may eventually be incorporated into the human food chain. To assess the impact of Fermi 2 operations to humans from the ingestion pathway, samples of milk, green leafy vegetables, and groundwater are collected and analyzed for radioactivity. The following sections discuss the type and frequency of terrestrial sampling, analyses performed, and a comparison of 2001 data to previous operational and preoperational data.

Milk Sampling

The milk sampling portion of the REMP is perhaps one of the most important aspects of the program. This is because a major pathway in the human food chain is the consumption of milk from grazing animals (dairy cows or goats) due to biological concentration and the short turn around time in this pathway. Milk is collected from one indicator location and one control location semimonthly when animals are in the pasture, and monthly when the animals are on stored feed. The milk is analyzed for iodine-131, gamma emitting radionuclides, and strontium-89/90. At times when milk samples are not available, grass samples are collected at both the control milk sample location and the location where milk is not available. Grass samples are analyzed for iodine-131 and other gamma emitting radionuclides.

Milk sampling began in 1979 during the preoperational program. During this time period, milk samples were analyzed for iodine-131 and other gamma emitting radionuclides. Cesium-137 and naturally occurring potassium-40 were the only radionuclides detected in milk samples during the preoperational program. The cesium-137 concentration averaged 3.60E+0 pCi/liter and is due to past atmospheric nuclear weapons testing. In 1986, after the nuclear accident at Chernobyl iodine-131 and cesium-137 were detected in both indicator and control milk samples. The average concentration for iodine-131 was 3.70E+0 pCi/liter and 6.60E+0 pCi/liter for cesium-137.

The analysis for strontium-89/90 began in 1988, and strontium-90 is routinely detected in both indicator and control milk samples because of past atmospheric nuclear weapons testing. Since 1988, the average concentration for strontium-90 has been 1.72E+0 pCi/liter.

During 2001, thirty six (36) milk samples were collected and analyzed for iodine-131, gamma emitting radionuclides, and strontium-89/90. No iodine-131 was detected in any of the samples. Strontium-90 was detected in both indicator and control milk samples and is due to fallout from past atmospheric weapons testing (see Figure 4). The indicator samples had an average strontium-90 concentration of 2.06E+0 pCi/liter and the control samples had an average concentration of 2.14E+0 pCi/liter. During 2001, no grass samples were scheduled or collected for the REMP program.

In 1970, the concentration of strontium-90 in Monroe County milk was 6.00E+0 pCi/liter according to the Michigan Department of Health's "Milk Surveillance", Radiation Data and Reports, Vol. 11-15, 1970-1974. Figure 4 shows the calculated radiological decay curve for the 1970 concentration of strontium-90 and the average concentrations since 1988. This graph illustrates that the inventory of strontium-90 in the local environment is decreasing with time and closely follows the calculated decay curve. This supports the fact that the inventory of strontium-90 in the environment is due to fallout from past atmospheric nuclear weapons testing and not the operation of Fermi 2.

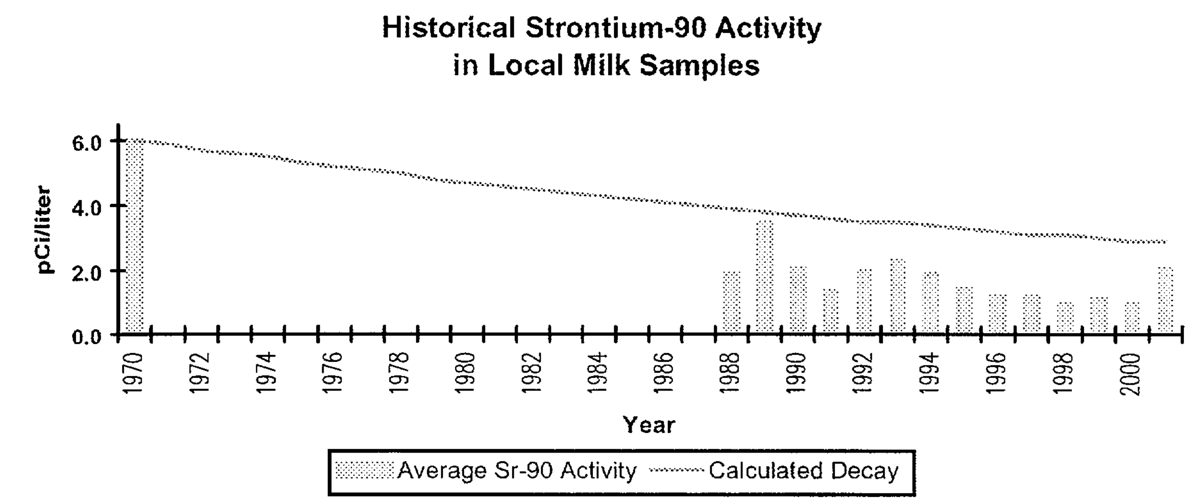

Figure 4 - Historical Strontium-90 Activity in Local Milk Samples; The concentration of strontium-90 in local milk samples is decreasing with time and is below the calculated decay curve. This supports the fact that strontium-90 in local milk is due to fallout from past atmospheric nuclear weapons testing and not the operation of Fermi 2.

Groundwater Sampling

In areas not served by municipal water systems, water supplies for domestic use are generally obtained from private wells. The network of private wells presently in use forms the source of water for domestic and livestock purposes in farms and homes west and north of the site. However, with the construction of new water plants and distribution systems, the water use trend in the area is from groundwater to surface water.

Groundwater is collected on a quarterly basis from four wells surrounding Fermi 2. The groundwater is analyzed for gamma emitting radionuclides and tritium. Sampling location GW-4 which is located approximately 0.6 miles west north west is designated as the control location because it is up-gradient and is least likely to be affected by the operation of the plant. The other three sampling locations are down-gradient from Fermi 2 and designated as indicator locations.

Groundwater sampling began in 1987, during the operational period of the REMP program. From 1987 to 1996 naturally occurring potassium-40, cesium-137, and tritium were detected in both indicator and control samples. The average concentration was 7.71E+0 pCi/liter for cesium-137 and 1.50E+2 pCi/liter for tritium. The presence of cesium-137 and tritium in groundwater samples is due to fallout from past atmospheric nuclear weapons testing leaching into the soil and becoming incorporated into the groundwater. From 1997 to 2000 no activity was detected in groundwater samples.

In 2001, sixteen (16) groundwater samples were collected and analyzed for gamma emitting radionuclides and tritium. No activity was detected in any of these groundwater samples.

Garden Sampling

Fermi 2 collects samples of broad leaf vegetables from indicator locations identified by the Annual Land Use Census. Samples are also collected at a control location that is at a distance and direction which is considered to be unaffected by plant operations. Samples are collected once a month during the growing season (June through September) and are analyzed for iodine-131 and other gamma emitting radionuclides.

Vegetable sampling started in 1982. During the preoperational period from 1982 to 1985, only naturally occurring potassium-40 was detected in both indicator and control vegetable samples. During the operational period from 1985 to 1990 and 1994 to 1995, only naturally occurring potassium-40 was detected in both indicator and control vegetable samples. However, in 1991, 1992, and 1993 cesium-137 was detected in one indicator sample each year and had an average concentration of 1.2E+1 pCi/kilogram.

Cesium-137 may become incorporated into plants by either uptake from the soil or direct deposition on foliar surfaces. Since cesium-137 is normally not detected in gaseous effluent samples from Fermi 2, and there have been no recent atmospheric weapons testing or nuclear accidents, the incorporation of cesium-137 by direct deposition is highly unlikely. The most probable source of cesium-137 in vegetable samples is the uptake of previously deposited cesium-137, which has leached into the soil. This cesium activity is attributed to fallout from past atmospheric weapons testing and to the nuclear accident at Chernobyl.

During 2001, eighteen (18) vegetable samples were collected and analyzed for iodine-131 and other gamma emitting radionuclides. No iodine-131 was detected in vegetable samples during 2001. The only gamma emitting radionuclide detected was naturally occurring potassium-40.

Terrestrial monitoring results for 2001 of milk, groundwater and leafy garden vegetable samples, showed only naturally occurring radioactivity, and radioactivity associated with fallout from past atmospheric nuclear weapons testing. The radioactivity levels detected were consistent with levels measured prior to the operation of Fermi 2 and no radioactivity attributable to activities at Fermi 2 was detected in any terrestrial samples. In conclusion, the terrestrial monitoring data show no adverse long-term trends in the terrestrial environment.

Aquatic Monitoring

Lake Erie, on which Fermi 2 borders, is used as a source for drinking water, as well as for recreational activities such as fishing, swimming, sunbathing, and boating. For this reason, Lake Erie and its tributaries are routinely monitored for radioactivity.

The aquatic monitoring portion of the REMP consists of sampling raw municipal drinking water, surface water, lake sediments, and fish for the presence of radioactivity. The following sections discuss the type and frequency of aquatic sampling, analyses performed, a comparison of 2001 data to previous operational and preoperational data.

Drinking Water Sampling

Detroit Edison monitors drinking water at one control location and one indicator location using automatic samplers. The automatic samplers collect samples, known as aliquots, at time intervals that are very short (hourly) relative to the sample collection period (monthly) in order to assure that a representative sample is obtained. Indicator water samples are obtained at the Monroe water intake located approximately 1.1 miles south of the plant. Detroit municipal water is used for the control samples and is obtained at the Allen Park water intake located approximately 18.6 miles north of the plant. Drinking water samples are collected on a monthly basis and analyzed for gross beta, strontium-89/90, and gamma emitting radionuclides. The monthly samples for each location are combined on a quarterly basis and analyzed for tritium activity.

In late 1980, as shown in Figure 5, an atmospheric nuclear weapon test was conducted by the Peoples Republic of China. As a result of this test, the average gross beta for 1981 was 9.80E+0 pCi/liter for water samples. Figure 5 also shows that, except for the Chinese weapons testing, the historic drinking water sample data are below the lower limit of detection (4.00E+0 pCi/liter) required by US Environmental Protection Agency's National Interim Primary Drinking Water regulations. Even during the Chinese weapons testing, the drinking water samples did not exceed the USEPA's maximum allowable criteria of 5.00E+1 pCi/liter gross beta. In 1980 and 1983, cesium-137 was detected in drinking water samples at levels ranging from 5.40E+0 pCi/liter to 1.90E+1 pCi/liter. Tritium was also detected during the preoperational program and had an average of 3.25E+2 pCi/liter. The presence of cesium-137 and detectable levels of tritium in these water samples is due to fallout from past atmospheric nuclear weapons testing and naturally occurring tritium.

From 1985 to 2000, the average annual gross beta activity for indicator samples was 2.24E+0 pCi/liter and 2.23E+0 pCi/liter for control samples. The analysis for strontium-89/90 began in 1988 and strontium-90 has been detected in both indicator and control samples. The average strontium-90 activity for indicator samples was 7.25E-1 pCi/liter and 7.56E-1 pCi/liter for control samples during this time period. Tritium was also detected in both indicator and control drinking water samples during this time period. The average tritium activity for indicator samples was 2.52E+2 pCi/liter and 2.60E+2 pCi/liter for control samples. The presence of strontium-90 and detectable levels of tritium in these water samples is due to fallout from past atmospheric nuclear weapons testing and naturally occurring tritium.

In 2001, twenty-five (25) drinking water samples were collected and analyzed for gross beta, gamma emitting radionuclides, strontium-89/90, and tritium. The average gross beta for indicator samples was 4.69E+0 and also 2.97E+0 pCi/liter for control samples. No gamma emitting radionuclides or strontium-89/90 activity was detected in drinking water samples during 2001. Six (6) quarterly composite drinking water samples were prepared and analyzed for tritium. No tritium activity was detected in drinking water samples during 2001.

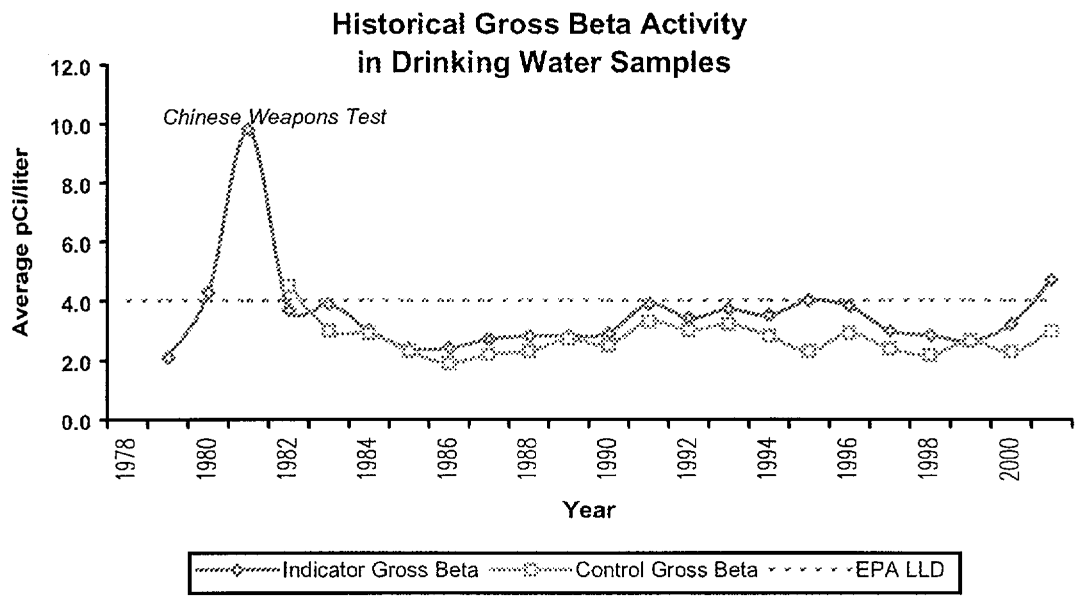

Figure 5 - Historical Gross Beta Activity in Drinking Water Samples; Since 1982, the annual concentrations of beta emitting radionuclides in drinking water samples collected from indicator locations have been consistent with those from control locations. This shows that Fermi 2 has had no measurable radiological impact on local drinking water.

Surface Water Sampling

Detroit Edison monitors surface water at two locations using automatic samplers. As with drinking water, surface water samples are collected at time intervals that are very short (hourly) relative to the sample collection period (monthly) in order to assure obtaining a representative sample. Indicator surface water samples are obtained at the Fermi 2 General Service Water building, located approximately 0.3 miles south southeast from Fermi 2. The control surface water samples are obtained from Trenton Channel Power Plant's cooling water intake on the Detroit River which is approximately 11.7 miles north north east of Fermi 2. Surface water samples are collected on a monthly basis and analyzed for strontium-89/90 and gamma emitting radionuclides. The monthly samples for each location are combined on a quarterly basis to form a quarterly composite sample and are analyzed for tritium.

Surface water sampling began in 1979 and the samples were analyzed for gamma emitting radionuclides, and tritium. During this preoperational program no gamma emitting radionuclides, except for naturally occurring potassium-40, were detected. Tritium was detected in both indicator and control samples during this time period and had an average concentration of 3.15E+2 pCi/liter. This tritium activity represents the background concentration due to naturally occurring tritium and tritium produced during past atmospheric nuclear weapons testing.

From 1985 to 2000, as part of the operational program, surface water samples were analyzed for gamma emitting radionuclides and tritium. The analysis for strontium-89/90 did not begin until 1988, and strontium-90 was detected in both indicator and control samples. The average strontium-90 concentration for this time period was 1.13E+0 pCi/liter. In 1990, two indicator samples showed detectable activity for cesium-137 at an average concentration of 1.20E+1 pCi/liter. The presence of cesium-137 and strontium-90 in these water samples is due to fallout from past atmospheric nuclear weapons testing. Tritium was detected in both indicator and control surface water samples during this time period at a concentration of 2.31E+2 pCi/liter. This tritium activity is consistent with background levels measured during the preoperational program.

In 2001, twenty-five (25) surface water samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. From these samples, six (6) quarterly composite samples were prepared and analyzed for tritium. During 2001, no gamma emitting radionuclides, strontium-89/90, or tritium were detected.

Sediment Sampling

Sediments often act as a sink (temporary or permanent) for radionuclides, but they may also become a source, as when they are resuspended during periods of increased turbulence or are dredged and deposited elsewhere. Sediment, in the vicinity of the liquid discharge point, represents the most likely site for accumulation of radionuclides in the aquatic environment and, with long-lived radionuclides, a gradual increase in radioactivity concentration would be expected over time if discharges occur. Sediment, therefore, provides a long-term indication of change that may appear in other sample media (i.e., water and fish samples).

Lake Erie shoreline and bottom sediments from five locations are collected on a semiannual basis (Spring and Fall) and are analyzed for gamma emitting radionuclides and strontium-89/90. There is one control location and four indicator locations. The control sample is collected near the Trenton Channel Power Plant's cooling water intake. The indicator samples are collected at Estral Beach, near the Fermi 2 liquid discharge area, the shoreline at the end of Pointe Aux Peaux, and Indian Trails Community Beach.

During the preoperational program there was not a control location, and indicator samples were analyzed for gamma emitting radionuclides. During the preoperational program, except for naturally occurring radionuclides, only cesium-137 was detected in sediment samples. For this time period the average cesium-137 concentration was 3.27E+2 pCi/kilogram. The presence of cesium-137 in these sediment samples is due to fallout from past atmospheric nuclear weapons testing.

From 1985 to 2000, cesium-137, strontium-90, and naturally occurring radionuclides were detected in sediment samples. The average cesium-137 concentration for indicator samples was 1.77E+2 pCi/kilogram and 1.13E+2 pCi/kilogram for control samples. The analysis for strontium-89/90 began in 1988, and strontium-90 has been routinely detected at similar concentrations in both indicator and control samples. The average strontium-90 activity for indicator samples was 1.80E+2 pCi/kilogram and 1.98E+2 pCi/kilogram for control samples. The presence of cesium-137 and strontium-90 in these sediment samples is due to fallout from past atmospheric nuclear weapons testing.

In 1990 and 1991, the Spring samples taken at the Fermi 2 liquid discharge line (Location S-2) showed activity for plant related radionuclides (manganese-54, cobalt-58, cobalt-60, and zinc-65) and was determined to be a result of liquid effluent from Fermi 2. The sample results were well below any regulatory reporting limits and were consistent with the activity released from the plant in liquid effluents and the dose impact was negligible.

In 2001, ten (10) sediment samples were collected and analyzed for gamma emitting radionuclides and strontium 89/90. Strontium-90 was detected in three indicator samples with an average concentration of 3.02E+2 pCi/kilogram. The presence of strontium-90 in sediment samples is due to fallout from past atmospheric nuclear weapons testing. Naturally occurring radionuclides of potassium, beryllium, and thorium were also detected in both indicator and control sediment samples for this sampling period.

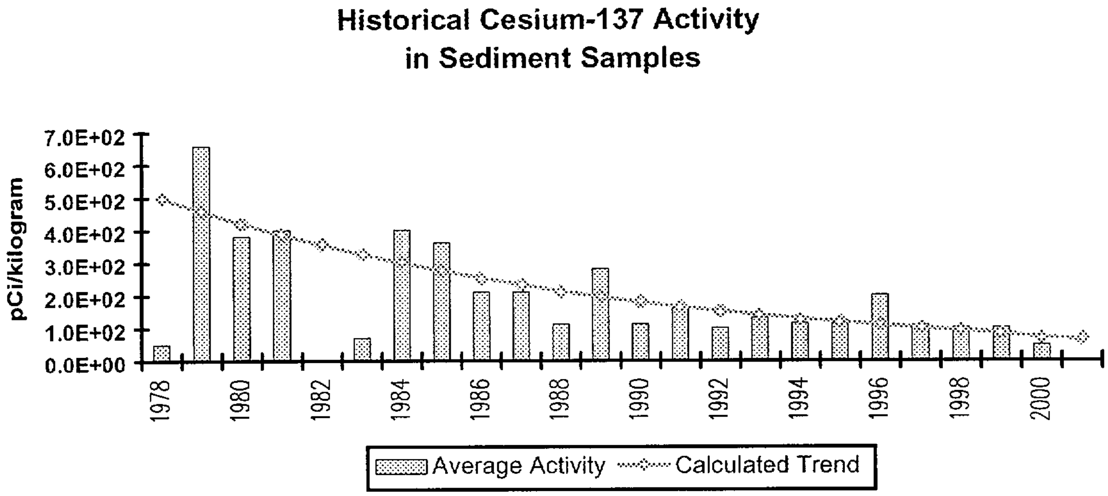

Figure 6 - Historical Cesium-137 Activity in Sediment Samples; As the calculated trend shows, the concentration of cesium-137 in Lake Erie sediments is decreasing with time. This supports the fact that cesium-137 in Lake Erie sediments is due to fallout from past atmospheric nuclear weapons testing and not the operation of Fermi 2.

Figure 6 shows the historical concentration of cesium-137 in sediment samples from 1978 to 2001. Using the data from these years, and the statistical method of least squares, an exponential curve can be calculated that represents the cesium-137 concentration in sediment. This curve has a negative slope which indicates the overall concentration of cesium-137 in the environment is decreasing with time. This supports the fact that the inventory of cesium-137 in the environment is due to fallout from past atmospheric nuclear weapons testing and not from the operation of Fermi 2.

Fish Sampling

Samples of fish are collected from Lake Erie at three locations on a semiannual basis. There are two control locations and one indicator location. The two control locations are offshore of Celeron Island and in Brest Bay. The indicator location is approximately 1200 feet offshore of the Fermi 2 liquid effluent discharge. Edible portions of the fish are analyzed for gamma emitting radionuclides and strontium-89/90.

During the preoperational program fish samples were analyzed for gamma emitting radionuclides. Only cesium-137 and naturally occurring potassium-40 were detected during this time period. The average concentration of cesium-137 for indicator samples was 3.53E+1 pCi/kilogram and 4.20E+1 pCi/kilogram for control samples. The presence of cesium-137 in these fish samples is due to fallout from past atmospheric nuclear weapons testing.

From 1985 to 1999, cesium-137 and naturally occurring potassium-40 were detected in fish samples. The average cesium-137 concentration for indicator samples was 3.95E+1 pCi/kilogram and 3.92E+1 pCi/kilogram for control samples. Figure 7 shows a graphical representation of cesium-137 comparing preoperational and operational average concentrations. The analysis for strontium-89/90 began in 1990, and strontium-90 has been routinely detected at similar concentrations in both indicator and control samples. The average strontium-90 concentration for indicator samples was 3.84E+1 pCi/kilogram and 3.39E+1 pCi/kilogram for control samples. The presence of cesium-137 and strontium-90 in these fish samples is due to fallout from past atmospheric nuclear weapons testing.

In 2001, thirty (30) fish samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. Strontium-90 and naturally occurring potassium-40 were detected in fish samples. One control sample showed detectable activity for strontium-90 at a concentration of 1.43E+2 pCi/kilogram. The presence of strontium-90 in fish samples is due to fallout from past atmospheric nuclear weapons testing.

Aquatic monitoring results for 2001 of water, sediment, and fish, showed only naturally occurring radioactivity and radioactivity associated with fallout from past atmospheric nuclear weapons testing and were consistent with levels measured prior to the operation of Fermi 2. In conclusion, no radioactivity attributable to activities at Fermi 2 was detected in any aquatic samples during 2001 and no adverse long-term trends are shown in the aquatic monitoring data.

Land Use Census

The Land Use Census is conducted in accordance with the Fermi 2 Offsite Dose Calculation Manual (ODCM), control 3.12.2, and satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. This census identifies changes in the use of unrestricted areas to permit modifications to monitoring programs for evaluating doses to individuals from principal pathways of exposure. The pathways of concern are listed below:

- **Inhalation Pathway** - Internal exposure as a result of breathing radionuclides carried in the air.

- **Ground Exposure Pathway** - External exposure from radionuclides deposited on the ground.

- **Plume Exposure Pathway** - External exposure directly from a plume or cloud of radioactive material.

- **Vegetation Pathway** - Internal exposure as a result of eating vegetables which have absorbed deposited radioactive material or which have absorbed radionuclides through the soil.

- **Milk Pathway** - Internal exposure as a result of drinking milk which may contain radioactive material as a result of dairy animals grazing on a pasture contaminated by radionuclides.

The Land Use Census is conducted during the growing season and is used to identify, within a radius of 5 miles, the location of the nearest residences, milk animals, meat animals, and gardens (greater than 50 square meters and containing broad leaf vegetation) in each of 16 meteorological sectors surrounding Fermi 2. Gardens greater than 50 square meters are the minimum size required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: (1) 20% of the garden is used for growing broad leaf vegetation (i.e., lettuce and cabbage); and (2) a vegetation yield of 2 kg/square meter.

2001 Land Use Census Results

The Land Use Census is conducted in accordance with ODCM control 3.12.2 and satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. This census identifies changes in the use of unrestricted areas to permit modifications to monitoring programs for evaluating doses to individuals from principal pathways of exposure. The annual Land Use Census is conducted during the growing season and is used to identify, within a radius of 5 miles, the location of the closest residences, milk animals, meat animals, and gardens in each of the 16 meteorological sectors surrounding Fermi 2.

The 2001 Land Use Census was performed during the month of August. The 2001 census data were obtained with the use of a hand-held Global Positioning System (GPS). These data were compared to the 2000 data to determine any significant changes in the use of the land. The results of the census are tabulated in Tables 9 – 12 of this report.

No significant changes in the land use between 2000 and 2001 were found that would require changing the location of the "maximum exposed individual". There were no changes in the category of closest residences. However, there were slight changes in the category of closest gardens. In the North, sector the closest garden was found further away from the plant than in 2000. In the West-South West sector a garden was identified 299 meters closer to the plant. In the South-South-West sector a new garden was identified at 88 meters closer to the plant. In the category of closest milk locations, one new milk cow location was identified in the North-West sector at 5,874 meters from the plant. Due to the distance from the plant, this new location's potential dose doesn't exceed the potential dose at the current maximum exposed individual's location. All other milk locations are goat milk and is not used for human consumption. There were no changes in the category of closest meat location in 2001. As with 2000, this census identified new residential housing construction which shows a continuing trend of converting agricultural land to other uses in the area surrounding Fermi 2.

As stated above, there were no significant changes in the 2001 land use that would require changing the location of the "maximum exposed individual". For that reason the location of "maximum exposed individual" remains the same, however the individual is now an adult and is described as follows:

Pathway	Sector	Azimuth (degrees)	Distance (meters)	Age Group	Maximum Organ
Ingestion (vegetation)	WNW	303.5	1103	Adult	thyroid

2001 LAND USE CENSUS
Closest Residences

Table 9

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2000	NE	34.7	1773	
2001	NE	34.7	1773	0
2000	NNE	11.2	1646	
2001	NNE	11.2	1646	0
2000	N	7.7	1776	
2001	N	7.7	1776	0
2000	NNW	332.8	1743	
2001	NNW	332.8	1743	0
2000	NW	309.9	1700	
2001	NW	309.9	1700	0
2000 (a)	WNW	303.5	1103	
2001	WNW	303.5	1103	0
2000	W	258.3	1787	
2001	W	258.3	1787	0
2000	WSW	238.2	2547	
2001	WSW	238.2	2547	0
2000	SW	230.3	2025	
2001	SW	230.3	2025	0
2000	SSW	200.4	1826	
2001	SSW	200.4	1826	0
2000	S	170.0	1640	
2001	S	170.0	1640	0
	ESE-SSE	Lake Erie		

(a) = Location of "maximum exposed individual"

2001 LAND USE CENSUS
Closest Gardens

Table 10

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2000	NE	32.9	3173	
2001	NE	32.9	3173	0
2000	NNE	15.9	1750	
2001	NNE	15.9	1750	0
2000	N	1.00	3136	
2001	N	358.9	3516	380
2000	NNW	332.3	4087	
2001	NNW	332.3	4087	0
2000	NW	309.9	1700	
2001	NW	309.9	1700	0
2000(a)	WNW	303.5	1103	
2001	WNW	303.5	1103	0
2000	W	265.8	2488	
2001	W	265.8	2488	0
2000	WSW	240.4	4502	
2001	WSW	246.7	4203	299
2000	SW	234.1	7066	
2001	SW	234.1	7066	0
2000	SSW	194.9	2463	
2001	SSW	194.7	2375	88
2000	S	None		
2001	S	181.9	1938	NA
	ESE - SSE	Lake Erie		

(a) = Location of "maximum exposed individual"

2001 LAND USE CENSUS

Milk Locations

Table 11

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2000	NE	None		
2001	NE	None		N/A
2000	NNE	None		
2001	NNE	None		N/A
2000	N	9.06	6686	
2001	N	9.06	6686	0
2000	NNW	None		
2001	NNW	None		N/A
2000	NW	None		
2001	NW	310.5	5874	N/A
2000	WNW	301.0	3672	
2001	WNW	301.0	3672	0
2000	W	None		
2001	W	None		N/A
2000	WSW	None		
2001	WSW	None		N/A
2000	SW	None		
2001	SW	None		N/A
2000	SSW	None		
2001	SSW	None		N/A
2000	S	None		
2001	S	None		N/A
	ESE - SSE	Lake Erie		N/A

2001 LAND USE CENSUS

Closest Meat Locations

Table 12

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2000	NE	None		
2001	NE	None		N/A
2000	NNE	None		
2001	NNE	None		N/A
2000	N	1.1	2899	
2001	N	1.1	2899	0
2000	NNW	336.0	7205	
2001	NNW	None		N/A
2000	NW	319.5	5225	
2001	NW	319.5	5225	0
2000	WNW	285.6	2602	
2001	WNW	285.6	2602	0
2000	W	None		
2001	W	None		N/A
2000	WSW	248.5	4606	
2001	WSW	248.5	4606	0
2000	SW	None		
2001	SW	None		N/A
2000	SSW	None		
2001	SSW	None		N/A
2000	S	None		
2001	S	None		N/A
	ESE - SSE	Lake Erie		N/A

Appendix A

Sampling Locations

Direct Radiation Sample Locations

Table A-1

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T1	NE/38°	1.3 mi.	Estral Beach, Pole on Lakeshore 23 Poles S of Lakeview (Special Area)	Q	I
T2	NNE/22°	1.2 mi.	East of termination of Brancheau St. on post (Special Area)	Q	I
T3	N/9°	1.1 mi.	Pole, NW corner of Swan Boat Club fence (Special Area)	Q	I
T4	NNW/337°	0.6 mi.	Site boundary and Toll Rd. on Site fence by API #2	Q	I
T5	NW/313°	0.6 mi.	Site boundary and Toll Rd. on Site fence by API #3	Q	I
T6	WNW/293°	0.6 mi.	Pole, NE corner of Bridge over Toll Rd.	Q	I
T7	W/270°	14.0 mi.	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles west of Doty Rd.	Q	C
T8	NW/305°	1.9 mi.	Pole on Post Rd. near NE corner of Dixie Hwy. and Post Rd.	Q	I
T9	NNW/334°	1.5 mi.	Pole, NW corner of Trombley and Swan View Rd.	Q	I
T10	N/6°	2.1 mi.	Pole, S side of Massarant- 2 poles W of Chinavare.	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Direct Radiation Sample Locations (Table A-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T11	NNE/23°	6.2 mi.	Pole, NE corner of Milliman and Jefferson	Q	I
T12	NNE/29°	6.3 mi.	Pointe Mouille Game Area Field Office, Pole near tree, N area of parking lot	Q	I
T13	N/356°	4.1 mi.	Labo and Dixie Hwy. Pole on SW corner with light	Q	I
T14	NNW/337°	4.4 mi.	Labo and Brandon Pole on SE corner near RR	Q	I
T15	NW/315°	3.9 mi.	Pole, behind Newport Post Office.	Q	I
T16	WNW/283°	4.9 mi.	Pole, SE corner of War and Post Rd.	Q	I
T17	W/271°	4.9 mi.	Pole, NE corner of Nadeau and Laprad near mobile home park.	Q	I
T18	WSW/247°	4.8 mi.	Pole, NE corner of Mentel and Hurd Rd.	Q	I
T19	SW/236°	5.2 mi.	Fermi siren pole on Waterworks Rd. NE corner of intersection - Sterling State Park Rd. Entrance Drive/Waterworks	Q	I
T20	WSW/257°	2.7 mi.	Pole, S side of Williams Rd, 8 poles W of Dixie Hwy. (Special Area)	Q	I
T21	WSW/239°	2.7 mi.	Pole, N side of Pearl at Parkview Woodland Beach (Special Area)	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Direct Radiation Sample Locations (Table A-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T22	S/172°	1.2 mi.	Pole, N side of Pointe Aux Peaux 2 poles W of Long - Site Boundary	Q	I
T23	SSW/195°	1.1 mi.	Pole, S side of Pointe Aux Peaux 1 pole W of Huron next to Vent Pipe - Site Boundary	Q	I
T24	SW/225°	1.2 mi.	Fermi Gate along Pointe Aux Peaux Rd. on fence wire W of gate Site Boundary	Q	I
T25	WSW/251°	1.5 mi.	Pole, Toll Rd. - 13 poles S of Fermi Drive	Q	I
T26	WSW/259°	1.1 mi.	Pole, Toll Rd. - 6 poles S of Fermi Drive	Q	I
T27	SW/225°	6.8 mi.	Pole, NE corner of McMillan and East Front St. (Special Area)	Q	I
T28	SW/229°	10.7 mi.	Pole, SE corner of Mortar Creek and LaPlaisance.	Q	C
T29	WSW/237°	10.3 mi.	Pole, E side of S Dixie, 1 pole S of Albain.	Q	C
T30	WSW/247°	7.8 mi.	Pole, St. Mary's Park corner of Elm and Monroe St., S side of parking lot next to river (Special Area)	Q	I
T31	WSW/255°	9.6 mi.	1st pole W of entrance drive Milton "Pat" Munson Recreational Reserve on North Custer Rd.	Q	C

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Direct Radiation Sample Locations (Table A-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T32	WNW/295°	10.3 mi.	Pole, corner of Stony Creek and Finzel Rd.	Q	I
T33	NW/317°	9.2 mi.	Pole, W side of Grafton Rd. 1 pole N of Ash and Grafton intersection.	Q	I
T34	NNW/338°	9.7 mi.	Pole, W side of Port Creek, 1 pole S of Will-Carleton Rd.	Q	I
T35	N/359°	6.9 mi.	Pole, S Side of S Huron River Dr. across from Race St. (Special Area)	Q	I
T36	N/358°	9.1 mi.	Pole, NE corner of Gibraltar and Cahill Rd.	Q	I
T37	NNE/21°	9.8 mi.	Pole, S corner of Adams and Gibraltar across from Humbug Marina.	Q	I
T38	WNW/294°	1.7 mi.	Residence - 6594 N. Dixie Hwy.	Q	I
T39	S/176°	0.3 mi.	SE corner of Protected Area Fence (PAF).	Q	O
T40	S/170°	0.3 mi.	Midway along OBA - (PAF)	Q	O
T41	SSE/161°	0.2 mi.	Midway between OBA and Shield Wall on PAF.	Q	O
T42	SSE/149°	0.2 mi.	Midway along Shield Wall on PAF.	Q	O
T43	SE/131°	0.1 mi.	Midway between Shield Wall and Aux Boilers on PAF.	Q	O
T44	ESE/109°	0.1 mi.	Opposite OSSF door on PAF.	Q	O

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Direct Radiation Sample Locations (Table A-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T45	E/86°	0.1 mi.	NE Corner of PAF.	Q	O
T46	ENE/67°	0.2 mi.	NE side of barge slip on fence.	Q	O
T47	S/185°	0.1 mi.	South of Turbine Bldg. rollup door on PAF.	Q	O
T48	SW/235°	0.2 mi.	30 ft. from corner of AAP on PAF.	Q	O
T49	WSW/251°	1.1 mi.	Corner of Site Boundary fence north of NOC along Critical Path Rd.	Q	I
T50	W/270°	0.9 mi.	Site Boundary fence near main gate by the south Bullit Street sign.	Q	I
T51	N/3°	0.4 mi.	Site Boundary fence north of north Cooling Tower.	Q	O
T52	NNE/20°	0.4 mi.	Site Boundary fence at the corner of Arson and Tower.	Q	O
T53	NE/55°	0.2 mi.	Site Boundary fence east of South Cooling Tower.	Q	O
T54	S/189°	0.3 mi.	Pole next to Fermi 2 Visitors Center.	Q	O
T55	WSW/251°	3.3 mi.	Pole, north side of Nadeau Rd. across from Sodt Elementary School Marquee	Q	I
T56	WSW/256°	2.9 mi.	Pole, entrance to Jefferson Middle School on Stony Creek Rd.	Q	I

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Direct Radiation Sample Locations (Table A-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
T57	W/260°	2.7 mi.	Pole, north side of Williams Rd. across from Jefferson High School entrance.	Q	I
T58	WSW/249°	4.9 mi.	Pole west of Hurd Elementary School Marquee	Q	I
T59	NW/325°	2.6 mi.	Pole north of St. Charles Church entrance on Dixie Hwy.	Q	I
T60	NNW/341°	2.5 mi.	1st pole north of North Elementary School entrance on Dixie Hwy.	Q	I
T61	W/268°	10.1 mi.	Pole, SW corner of Stewart and Raisinville Rd.	Q	I
T62	SW/232°	9.7 mi.	Pole, NE corner of Albain and Hull Rd.	Q	I
T63	WSW/245°	9.6 mi.	Pole, NE corner of Dunbar and Telegraph Rd.	Q	I
T64	WNW/286°	0.2 mi.	West of switchgear yard on PAF	Q	O
T65	NW/322°	0.1 mi.	PAF switchgear yard area NW of RHR complex.	Q	O
T66	NE/50°	0.1 mi.	Behind Bldg. 42 on PAF	Q	O
T67	NNW/338°	0.2 mi.	Site Boundary fence West of South Cooling Tower.	Q	O

I = Indicator *C = Control* *O = On-site* *Q = Quarterly*

Air Particulate and Air Iodine Sample Locations

Table A-2

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
API-1	NE/39°	1.4 mi.	Estral Beach Pole on Lakeshore, 18 Poles S of Lakeview (Nearest Community with highest X/Q)	W	I
API-2	NNW/337°	0.6 mi.	Site Boundary and Toll Road, on Site Fence by T-4	W	I
API-3	NW/313°	0.6 mi.	Site Boundary and Toll Road, on Site Fence by T-5	W	I
API-4	W/270°	14.0 mi.	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles west of Doty Rd.	W	C
API-5	S/188°	1.2 mi.	Pole, N corner of Pointe Aux Peaux and Dewey Rd.	W	I

I = Indicator *C = Control* *W = Weekly*

Milk Sample Locations

Table A-3

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
M-2	NW/319°	5.4 mi.	Reaume Farm - 2705 E Labo	M-SM	I
M-8	WNW/289°	9.9 mi.	Calder Dairy - 9334 Finzel Rd	M-SM	C

I = Indicator *C = Control* *M = Monthly* *SM = Semimonthly*

Garden Sample Locations

Table A-4

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
FP-1	NNE/21°	3.8 mi.	9501 Turnpike Highway	M	I
FP-3	NNE/12°	1.1 mi.	6441 Brancheau	M	I
FP-7	WNW/302°	0.7 mi.	6200 Langton	M	I
FP-9	W/261°	10.9 mi.	4074 North Custer Road	M	C

I = Indicator *C = Control* *M = Monthly (when available)*

Drinking Water Sample Locations

Table A-5

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
DW-1	S/174°	1.1 mi.	Monroe Water Station N Side of Pointe Aux Peaux 1/2 Block W of Long Rd	M	I
DW-2	N/8°	18.5 mi.	Detroit Water Station 14700 Moran Rd. Allen Park	M	C

I = Indicator *C = Control* *M = Monthly*

Surface Water Sample Locations

Table A-6

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
SW-2	NNE/20°	11.7 mi.	DECo's Trenton Channel Power Plant Intake Structure (Screenhouse #1)	M	C
SW-3	SSE/160°	0.2 mi.	DECO's Fermi 2 General Service Water Intake Structure	M	I

I = Indicator *C = Control* *M = Monthly*

Groundwater Sample Locations

Table A-7

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
GW-1	S/175°	0.4 mi.	Approx. 100 ft W of Lake Erie, EF-1 Parking lot near gas fired peakers	Q	I
GW-2	SSW/208°	1.0 mi.	4 ft S of Pointe Aux Peaux (PAP) Rd. Fence 427 ft W of where PAP crosses over Stoney Point's Western Dike	Q	I
GW-3	SW/226°	1.0 mi.	143 ft W of PAP Rd. Gate, 62 ft N of PAP Rd. Fence	Q	I
GW-4	WNW/299°	0.6 mi.	42 ft S of Langton Rd, 8 ft E of Toll Rd. Fence	Q	C

I = Indicator *C = Control* *Q = Quarterly*

Sediment Sample Locations

Table A-8

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
S-1	SSE/165°	0.9 mi.	Pointe Aux Peaux, Shoreline to 500 ft offshore sighting directly to Land Base Water Tower	SA	I
S-2	E/81°	0.2 mi.	Fermi 2 Discharge, approx. 200 ft offshore	SA	I
S-3	NE/39°	1.1 mi.	Estral Beach, approx. 200 ft offshore, off North shoreline where Swan Creek and Lake Erie meet	SA	I
S-4	WSW/241°	3.0 mi.	Indian Trails Community Beach	SA	I
S-5	NNE/20°	11.7 mi.	DECo's Trenton Channel Power Plant intake area.	SA	C

I = Indicator *C = Control* *SA = Semiannually*

Fish Sample Locations

Table A-9

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx.)	Description	Collection Frequency	Type
F-1	NNE/31°	9.5 mi.	Near Celeron Island	SA	C
F-2	E/86°	0.4 mi.	Fermi 2 Discharge (approx. 1200 ft offshore)	SA	I
F-3	SW/227°	3.5 mi.	Brest Bay	SA	C

I = Indicator *C = Control* *SA = Semiannually*

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Appendix B

Environmental Data Summary

Table B-1 Radiological Environmental Monitoring Program Summary

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Direct Radiation *mR/std qtr*	Gamma (TLD) 196	1.0	14.2 (180/180) 9.4 to 21.9	T-49 (Indicator)	19.3 (4/4) 17.1 to 21.9	13.6 (16/16) 11.6 to 16.4	None
Airborne Particulates *pCi/cu. m.*	Gross Beta 256	1.00E-2	2.62E-2 (204/204) 9.10E-3 to 1.40E-1	API-2 (Indicator)	2.78E-2 (51/51) 1.06E-2 to 1.40E-1	2.52E-2 (52/52) 1.20E-2 to 6.54E-2	None
	Gamma Spec. 20						
	Be-7	N/A	8.29E-2 (15/16) 5.61E-2 to 1.13E-1	API-1 (Indicator)	9.00E-2 (3/4) 7.62E-2 to 1.03E-1	6.67E-2 (4/4) 5.35E-2 to 8.79E-2	None
	K-40	N/A	<MDA			<MDA	None
	Mn-54	N/A	<MDA			<MDA	None
	Co-58	N/A	<MDA			<MDA	None
	Fe-59	N/A	<MDA			<MDA	None
	Co-60	N/A	<MDA			<MDA	None
	Zn-65	N/A	<MDA			<MDA	None
	Zr-95	N/A	<MDA			<MDA	None
	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	5.00E-2	<MDA			<MDA	None
	Cs-137	6.00E-2	<MDA			<MDA	None
	Ba-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	<MDA			<MDA	None
Airborne Iodine *pCi/cu. m.*	I-131 256	7.00E-2	<MDA			<MDA	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Milk *pCi/l*	I-131 36	1.00E+0	<MDA			<MDA	None
	Sr-89 36	N/A	<MDA			<MDA	None
	Sr-90	N/A	2.06E+0 (9/18) 1.51E+0 to 3.54E+0	M-8 (Control)	2.14E+0 (3/18) 1.73E+0 to 2.73E+0	2.14E+0 (3/18) 1.73E+0 to 2.73E+0	None
	Gamma Spec. 36						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	1.39E+3 (17/18) 1.29E+3 to 1.48E+3	M-2 (Indicator)	1.39E+3 (17/18) 1.29E+3 to 1.48E+3	1.38E+3 (18/18) 1.07E+3 to 1.53E+3	None
	Mn-54	N/A	<MDA			<MDA	None
	Co-58	N/A	<MDA			<MDA	None
	Fe-59	N/A	<MDA			<MDA	None
	Co-60	N/A	<MDA			<MDA	None
	Zn-65	N/A	<MDA			<MDA	None
	Zr-95	N/A	<MDA			<MDA	None
	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	1.50E+1	<MDA			<MDA	None
	Cs-137	1.80E+1	<MDA			<MDA	None
	Ba-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	<MDA			<MDA	None
Vegetation *pCi/kg wet*	I-131 18	6.00E+1	<MDA			<MDA	None
	Gamma Spec. 18						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	2.84E+3 (12/12) 1.57E+3 to 4.15E+3	FP-9 (Control)	4.18E+3 (4/4) 3.25E+3 to 5.95E+3	4.18E+3 (4/4) 3.25E+3 to 5.95E+3	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Vegetation (cont.) *pCi/kg wet*	Mn-54	N/A	<MDA			<MDA	None
	Co-58	N/A	<MDA			<MDA	None
	Fe-59	N/A	<MDA			<MDA	None
	Co-60	N/A	<MDA			<MDA	None
	Zn-65	N/A	<MDA			<MDA	None
	Zr-95	N/A	<MDA			<MDA	None
	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	6.00E+1	<MDA			<MDA	None
	Cs-137	8.00E+1	<MDA			<MDA	None
	Ba-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	<MDA			<MDA	None
Drinking Water *pCi/l*	Gross Beta 25	4.00E+0	4.69E+0 (8/13) 3.24E+0 to 9.75E+0	DW-1 (Indicator)	4.69E+0 (8/13) 3.24E+0 to 9.75E+0	2.97E+0 (4/12) 2.62E+0 to 3.74E+0	None
	Sr-89 25	N/A	<MDA			<MDA	None
	Sr-90	N/A	<MDA			<MDA	None
	Gamma Spec. 25						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	<MDA			<MDA	None
	Cr-51	N/A	<MDA			<MDA	None
	Mn-54	1.50E+1	<MDA			<MDA	None
	Co-58	1.50E+1	<MDA			<MDA	None
	Fe-59	3.00E+1	<MDA			<MDA	None
	Co-60	1.50E+1	<MDA			<MDA	None
	Zn-65	3.00E+1	<MDA			<MDA	None
	Zr-95	1.50E+1	<MDA			<MDA	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Drinking Water (cont.) *pCi/l*	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	1.50E+1	<MDA			<MDA	None
	Cs-137	1.80E+1	<MDA			<MDA	None
	Ba-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	<MDA			<MDA	None
	H-3 6	2.00E+3	<MDA			<MDA	None
Surface Water *pCi/l*	Sr-89 25	N/A	<MDA			<MDA	None
	Sr-90	N/A	<MDA			<MDA	None
	Gamma Spec. 25						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	<MDA			<MDA	None
	Cr-51	N/A	<MDA			<MDA	None
	Mn-54	1.50E+1	<MDA			<MDA	None
	Co-58	1.50E+1	<MDA			<MDA	None
	Fe-59	3.00E+1	<MDA			<MDA	None
	Co-60	1.50E+1	<MDA			<MDA	None
	Zn-65	3.00E+1	<MDA			<MDA	None
	Zr-95	1.50E+1	<MDA			<MDA	None
	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	1.50E+1	<MDA			<MDA	None
	Cs-137	1.80E+1	<MDA			<MDA	None
	Ba-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Surface Water (cont.) *pCi/l*	Th-228	N/A	<MDA			<MDA	None
	H-3 6	2.00E+3	<MDA			<MDA	None
Groundwater *pCi/l*	Gamma Spec. 16						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	<MDA			<MDA	None
	Cr-51	N/A	<MDA			<MDA	None
	Mn-54	1.50E+1	<MDA			<MDA	None
	Co-58	1.50E+1	<MDA			<MDA	None
	Fe-59	3.00E+1	<MDA			<MDA	None
	Co-60	1.50E+1	<MDA			<MDA	None
	Zn-65	3.00E+1	<MDA			<MDA	None
	Zr-95	1.50E+1	<MDA			<MDA	None
	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	1.50E+1	<MDA			<MDA	None
	Cs-137	1.80E+1	<MDA			<MDA	None
	Ba-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	<MDA			<MDA	None
	H-3 16	2.00E+3	<MDA			<MDA	None
Sediment *pCi/kg dry*	Sr-89 10	N/A	<MDA			<MDA	
	Sr-90	N/A	3.02E+2 (3/8) 2.29E+2 to 4.12E+2	S-1 (Indicator)	3.38E+2 (2/2) 2.64E+2 to 4.12E+2	<MDA	None
	Gamma Spec. 10						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	1.06E+4 (8/8) 8.16E+3 to 1.37E+4	S-5 (Control)	1.19E+4 (2/2) 9.54E+3 to 1.42E+4	1.19E+4 (2/2) 9.54E+3 to 1.42E+4	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Sediment (cont.)	Mn-54	N/A	<MDA			<MDA	None
pCi/kg dry	Co-58	N/A	<MDA			<MDA	None
	Fe-59	N/A	<MDA			<MDA	None
	Co-60	N/A	<MDA			<MDA	None
	Zn-65	N/A	<MDA			<MDA	None
	Zr-95	N/A	<MDA			<MDA	None
	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	1.50E+2	<MDA			<MDA	None
	Cs-137	1.80E+2	<MDA			<MDA	None
	Ba-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	2.01E+2 (7/8) 9.99E+1 to 4.38E+2	S-2 (Indicator)	4.38E+2 (1/2)	4.14E+2 (2/2) 4.13E+2 to 4.16E+2	None
Fish	Sr-89 30	N/A	<MDA			<MDA	None
pCi/kg wet	Sr-90	N/A	<MDA	F-3 (Control)	1.43E+2 (1/21)	1.43E+2 (1/21)	None
	Gamma Spec. 30						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	2.88E+3 (9/9) 1.81E+3 to 3.68E+3	F-2 (Indicator)	2.88E+3 (9/9) 1.81E+3 to 3.68E+3	2.72E+3 (21/21) 1.78E+3 to 3.59E+3	None
	Mn-54	1.30E+2	<MDA			<MDA	None
	Co-58	1.30E+2	<MDA			<MDA	None
	Fe-59	2.60E+2	<MDA			<MDA	None
	Co-60	1.30E+2	<MDA			<MDA	None
	Zn-65	2.60E+2	<MDA			<MDA	None

Table B-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 2001
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Fish (cont.)	Zr-95	N/A	<MDA			<MDA	None
pCi/kg wet	Ru-103	N/A	<MDA			<MDA	None
	Ru-106	N/A	<MDA			<MDA	None
	Cs-134	1.30E+2	<MDA			<MDA	None
	Cs-137	1.50E+2	<MDA			<MDA	None
	Ba-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	Th-228	N/A	<MDA			<MDA	None

Direct Radiation mean and range values are based on off-site TLDs
LLD = Fermi 2 ODCM LLD: nominal lower limit of detection based on 4.66 sigma error for background sample.
<MDA = Less than the lab's minimum detectable activity which is less than the LLD.
Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (F).
Locations are specified by Fermi 2 code and are described in Appendix A Sampling Locations.
Non-routine results are those which are reportable according to Fermi 2 ODCM control 3.12.1.

Note: Other nuclides were considered in analysis results, but only those identifiable were reported in addition to ODCM listed nuclides.

Appendix C

Environmental Data Tables

FERMI 2

TLD ANALYSIS

(mR/Std Qtr)

STATION NUMBER	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
T-1	11.71	11.82	13.97	12.71
T-2	13.21	14.31	16.60	14.40
T-3	9.66	9.37	11.77	9.78
T-4	11.67	12.81	15.58	13.16
T-5	13.54	13.56	17.18	13.96
T-6	12.55	14.06	17.85	13.69
T-7	11.90	12.44	14.81	12.28
T-8	13.51	14.08	17.01	15.19
T-9	12.86	13.56	17.71	13.60
T-10	13.22	13.96	17.02	13.96
T-11	12.17	11.58	14.76	12.35
T-12	11.52	12.39	13.39	11.63
T-13	12.52	14.23	19.00	14.53
T-14	12.93	14.55	17.26	14.73
T-15	11.65	11.99	14.24	11.44
T-16	14.28	15.91	20.41	16.20
T-17	11.39	11.10	13.44	11.17
T-18	12.60	12.88	15.33	12.51
T-19	12.95	13.12	15.55	13.63
T-20	14.45	15.70	18.85	16.21
T-21	11.23	11.41	14.16	11.32
T-22	12.84	13.07	15.03	13.37
T-23	12.95	13.19	15.93	13.78
T-24	10.95	11.49	13.73	11.58
T-25	15.33	16.97	19.84	16.20
T-26	15.05	15.79	20.95	16.51
T-27	10.48	10.60	12.76	11.24
T-28	12.06	11.58	15.57	12.99
T-29	13.30	15.04	15.75	13.45
T-30	13.01	14.65	15.81	13.23
T-31	12.26	14.68	16.43	13.24
T-32	12.00	15.29	16.59	13.44
T-33	10.74	12.72	13.81	12.05
T-34	11.11	12.93	15.80	12.36
T-35	11.57	13.43	14.11	12.49
T-36	(a)	15.20	16.07	13.64
T-37	12.68	15.14	15.31	13.94
T-38	13.45	15.36	17.25	14.61
T-39	48.67	56.78	64.07	27.81
T-40	41.07	46.79	51.88	24.61
T-41	71.28	82.54	94.07	39.70
T-42	73.44	83.16	98.17	39.51
T-43	81.62	91.19	99.16	41.38
T-44	69.70	82.08	87.39	37.32
T-45	45.61	52.06	58.91	25.68
T-46	32.89	37.79	44.83	23.35
T-47	72.39	83.32	93.23	39.91

FERMI 2
TLD ANALYSIS (CONT.)
(mR/Std Qtr)

STATION NUMBER	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
T-48	35.44	41.40	43.27	22.65
T-49	17.08	20.01	21.93	18.29
T-50	14.91	15.40	16.33	14.08
T-51	10.36	10.90	12.53	11.43
T-52	13.77	15.82	16.55	13.34
T-53	21.58	24.48	27.46	16.85
T-54	15.44	17.35	18.62	13.36
T-55	12.83	14.23	16.67	14.85
T-56	12.57	13.79	16.21	14.00
T-57	15.19	17.08	18.83	16.75
T-58	17.44	12.61	14.51	13.44
T-59	12.29	13.17	15.08	13.56
T-60	13.23	15.12	16.94	(a)
T-61	13.46	16.10	17.09	15.79
T-62	13.49	15.37	17.03	15.60
T-63	11.35	12.71	13.99	12.92
T-64	18.86	22.97	23.70	15.61
T-65	20.97	24.35	28.14	19.58
T-66	108.49	123.56	138.26	59.45
T-67	16.44	17.29	20.40	15.35

(a) TLD missing, see Appendix D - Program Execution.

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-1 FIRST QUARTER

Start Date	End Date	Activity		
1/4/2001	1/9/2001	3.59E-02	+/-	4.47E-03
1/9/2001	1/17/2001	3.03E-02	+/-	2.88E-03
1/17/2001	1/23/2001	3.75E-02	+/-	3.83E-03
1/23/2001	1/30/2001	2.68E-02	+/-	3.23E-03
1/30/2001	2/6/2001	2.21E-02	+/-	3.57E-03
2/7/2001	2/13/2001	1.77E-02	+/-	3.06E-03
2/13/2001	2/20/2001	3.73E-02	+/-	2.76E-03
2/20/2001	2/27/2001	2.78E-02	+/-	2.33E-03
2/27/2001	3/6/2001	2.88E-02	+/-	2.54E-03
3/6/2001	3/13/2001	1.51E-02	+/-	2.18E-03
3/13/2001	3/20/2001	(a)		
3/21/2001	3/27/2001	1.64E-02	+/-	2.06E-03
3/27/2001	4/3/2001	1.86E-02	+/-	2.76E-03

API-1 SECOND QUARTER

Start Date	End Date	Activity		
4/3/2001	4/10/2001	2.19E-02	+/-	2.83E-03
4/10/2001	4/17/2001	1.62E-02	+/-	2.38E-03
4/17/2001	4/24/2001	2.18E-02	+/-	2.38E-03
4/24/2001	5/1/2001	2.73E-02	+/-	2.55E-03
5/1/2001	5/8/2001	2.58E-02	+/-	2.32E-03
5/8/2001	5/15/2001	2.01E-02	+/-	2.28E-03
5/15/2001	5/22/2001	2.38E-02	+/-	2.33E-03
5/22/2001	5/29/2001	1.35E-02	+/-	1.99E-03
5/29/2001	6/5/2001	1.37E-02	+/-	2.59E-03
6/5/2001	6/12/2001	2.05E-02	+/-	2.34E-03
6/12/2001	6/19/2001	2.13E-02	+/-	1.91E-03
6/19/2001	6/26/2001	2.20E-02	+/-	2.41E-03
6/26/2001	7/3/2001	2.67E-02	+/-	2.31E-03

(a) Sample not collected see Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-1 THIRD QUARTER

Start Date	End Date	Activity		
7/3/2000	7/11/2001	(a)		
7/11/2001	7/18/2001	2.12E-02	+/-	2.99E-03
7/18/2001	7/24/2001	4.08E-02	+/-	2.55E-03
7/24/2001	7/31/2001	2.03E-02	+/-	2.46E-03
7/31/2001	8/7/2001	2.78E-02	+/-	2.44E-03
8/7/2001	8/14/2001	3.15E-02	+/-	2.63E-03
8/14/2001	8/21/2001	2.53E-02	+/-	2.29E-03
8/21/2001	8/28/2001	3.18E-02	+/-	2.72E-03
8/28/2001	9/4/2001	2.66E-02	+/-	2.34E-03
9/4/2001	9/11/2001	2.26E-02	+/-	2.31E-03
9/11/2001	9/18/2001	2.29E-02	+/-	2.32E-03
9/18/2001	9/25/2001	2.95E-02	+/-	2.50E-03
9/25/2001	10/2/2001	1.50E-02	+/-	2.17E-03

API-1 FOURTH QUARTER

Start Date	End Date	Activity		
10/2/2001	10/9/2001	2.29E-02	+/-	2.34E-03
10/9/2001	10/16/2001	1.83E-02	+/-	2.32E-03
10/16/2001	10/23/2001	2.65E-02	+/-	2.46E-03
10/23/2001	10/30/2001	1.87E-02	+/-	2.25E-03
10/30/2001	11/6/2001	2.49E-02	+/-	2.35E-03
11/6/2001	11/13/2001	2.29E-02	+/-	2.43E-03
11/13/2001	11/20/2001	6.85E-02	+/-	2.97E-03
11/20/2001	11/27/2001	3.27E-02	+/-	2.53E-03
11/27/2001	12/4/2001	2.79E-02	+/-	2.49E-03
12/4/2001	12/11/2001	4.02E-02	+/-	2.58E-03
12/11/2001	12/18/2001	3.20E-02	+/-	2.56E-03
12/18/2001	12/26/2001	3.04E-02	+/-	2.18E-03
12/26/2001	1/2/2002	2.07E-02	+/-	2.38E-03

(a) Sample not collected see Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-2 FIRST QUARTER

Start Date	End Date	Activity		
1/4/2001	1/9/2001	3.61E-02	+/-	3.87E-03
1/9/2001	1/17/2001	3.44E-02	+/-	2.63E-03
1/17/2001	1/23/2001	3.60E-02	+/-	3.38E-03
1/23/2001	1/30/2001	2.74E-02	+/-	2.89E-03
1/30/2001	2/6/2001	2.89E-02	+/-	2.44E-03
2/6/2001	2/13/2001	2.35E-02	+/-	3.10E-03
2/13/2001	2/20/2001	4.47E-02	+/-	3.19E-03
2/20/2001	2/27/2001	1.40E-01	+/-	1.26E-02
2/27/2001	3/6/2001	3.45E-02	+/-	2.45E-03
3/6/2001	3/13/2001	1.43E-02	+/-	1.97E-03
3/13/2001	3/20/2001	1.83E-02	+/-	1.86E-03
3/20/2001	3/27/2001	1.83E-02	+/-	1.77E-03
3/27/2001	4/3/2001	2.26E-02	+/-	2.69E-03

API-2 SECOND QUARTER

Start Date	End Date	Activity		
4/3/2001	4/10/2001	1.56E-02	+/-	2.77E-03
4/10/2001	4/17/2001	1.63E-02	+/-	2.41E-03
4/17/2001	4/24/2001	2.50E-02	+/-	3.98E-03
4/24/2001	5/1/2001	2.67E-02	+/-	2.47E-03
5/1/2001	5/8/2001	2.98E-02	+/-	2.45E-03
5/8/2001	5/15/2001	2.31E-02	+/-	2.25E-03
5/15/2001	5/22/2001	2.45E-02	+/-	2.31E-03
5/22/2001	5/29/2001	1.18E-02	+/-	1.88E-03
5/29/2001	6/5/2001	1.06E-02	+/-	9.07E-04
6/5/2001	6/12/2001	1.75E-02	+/-	2.12E-03
6/12/2001	6/19/2001	2.41E-02	+/-	1.08E-03
6/19/2001	6/26/2001	1.77E-02	+/-	2.33E-03
6/26/2001	7/3/2001	2.70E-02	+/-	2.50E-03

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-2 THIRD QUARTER

Start Date	End Date	Activity		
7/3/2001	7/10/2001	2.06E-02	+/-	2.80E-03
7/10/2001	7/18/2001	1.94E-02	+/-	2.39E-03
7/18/2001	7/24/2001	3.90E-02	+/-	2.35E-03
7/24/2001	7/31/2001	1.87E-02	+/-	2.37E-03
7/31/2001	8/7/2001	2.59E-02	+/-	2.50E-03
8/7/2001	8/14/2001	3.63E-02	+/-	2.94E-03
8/14/2001	8/21/2001	2.44E-02	+/-	2.41E-03
8/21/2001	8/28/2001	2.60E-02	+/-	2.88E-03
8/28/2001	9/4/2001	2.23E-02	+/-	2.45E-03
9/4/2001	9/11/2001	1.63E-02	+/-	2.40E-03
9/11/2001	9/18/2001	1.95E-02	+/-	2.49E-03
9/18/2001	9/25/2001	2.51E-02	+/-	2.59E-03
9/25/2001	10/2/2001	(a)		

API-2 FOURTH QUARTER

Start Date	End Date	Activity		
10/2/2001	10/9/2001	3.26E-02	+/-	5.75E-03
10/9/2001	10/16/2001	2.20E-02	+/-	2.44E-03
10/16/2001	10/23/2001	2.52E-02	+/-	2.52E-03
10/23/2001	10/30/2001	1.41E-02	+/-	2.37E-03
10/30/2001	11/6/2001	2.33E-02	+/-	2.49E-03
11/6/2001	11/13/2001	2.32E-02	+/-	2.61E-03
11/13/2001	11/20/2001	6.12E-02	+/-	3.10E-03
11/20/2001	11/27/2001	3.32E-02	+/-	2.89E-03
11/27/2001	12/4/2001	2.86E-02	+/-	2.72E-03
12/4/2001	12/11/2001	2.94E-02	+/-	2.73E-03
12/11/2001	12/18/2001	3.02E-02	+/-	2.82E-03
12/18/2001	12/26/2001	2.91E-02	+/-	2.43E-03
12/26/2001	1/2/2002	2.40E-02	+/-	2.66E-03

(a) Sample not counted see Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-3 FIRST QUARTER

Start Date	End Date	Activity		
1/4/2001	1/9/2001	2.84E-02	+/-	3.21E-03
1/9/2001	1/17/2001	3.28E-02	+/-	2.20E-03
1/17/2001	1/23/2001	3.89E-02	+/-	2.89E-03
1/23/2001	1/30/2001	3.13E-02	+/-	2.47E-03
1/30/2001	2/6/2001	3.03E-02	+/-	2.00E-03
2/6/2001	2/13/2001	2.08E-02	+/-	2.52E-03
2/13/2001	2/20/2001	3.67E-02	+/-	2.61E-03
2/20/2001	2/27/2001	3.18E-02	+/-	2.66E-03
2/27/2001	3/6/2001	2.81E-02	+/-	2.44E-03
3/6/2001	3/13/2001	1.59E-02	+/-	1.98E-03
3/13/2001	3/20/2001	2.06E-02	+/-	1.91E-03
3/20/2001	3/27/2001	2.29E-02	+/-	1.78E-03
3/27/2001	4/3/2001	2.33E-02	+/-	2.76E-03

API-3 SECOND QUARTER

Start Date	End Date	Activity		
4/3/2001	4/10/2001	2.15E-02	+/-	1.92E-03
4/10/2001	4/17/2001	1.57E-02	+/-	1.71E-03
4/17/2001	4/24/2001	2.28E-02	+/-	2.91E-03
4/24/2001	5/1/2001	2.99E-02	+/-	1.90E-03
5/1/2001	5/8/2001	2.92E-02	+/-	1.85E-03
5/8/2001	5/15/2001	2.45E-02	+/-	1.72E-03
5/15/2001	5/22/2001	2.16E-02	+/-	1.74E-03
5/22/2001	5/29/2001	1.50E-02	+/-	1.92E-03
5/29/2001	6/5/2001	1.28E-02	+/-	2.31E-03
6/5/2001	6/12/2001	1.57E-02	+/-	2.23E-03
6/12/2001	6/19/2001	2.35E-02	+/-	1.97E-03
6/19/2001	6/26/2001	1.63E-02	+/-	2.16E-03
6/26/2001	7/3/2001	3.05E-02	+/-	2.68E-03

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-3 THIRD QUARTER

Start Date	End Date	Activity		
7/3/2001	7/10/2001	1.81E-02	+/-	2.31E-03
7/10/2001	7/18/2001	1.66E-02	+/-	2.23E-03
7/18/2001	7/24/2001	3.23E-02	+/-	2.16E-03
7/24/2001	7/31/2001	1.18E-02	+/-	2.38E-03
7/31/2001	8/7/2001	2.32E-02	+/-	2.19E-03
8/7/2001	8/14/2001	2.70E-02	+/-	2.43E-03
8/14/2001	8/21/2001	2.21E-02	+/-	2.61E-03
8/21/2001	8/28/2001	2.70E-02	+/-	2.81E-03
8/28/2001	9/4/2001	2.58E-02	+/-	2.65E-03
9/4/2001	9/11/2001	1.83E-02	+/-	2.51E-03
9/11/2001	9/18/2001	2.29E-02	+/-	2.72E-03
9/18/2001	9/25/2001	2.64E-02	+/-	2.87E-03
9/25/2001	10/2/2001	1.10E-02	+/-	2.49E-03

API-3 FOURTH QUARTER

Start Date	End Date	Activity		
10/2/2001	10/9/2001	2.80E-02	+/-	2.85E-03
10/9/2001	10/16/2001	2.01E-02	+/-	2.71E-03
10/16/2001	10/23/2001	2.82E-02	+/-	2.94E-03
10/23/2001	10/30/2001	1.91E-02	+/-	2.70E-03
10/30/2001	11/6/2001	1.92E-02	+/-	2.74E-03
11/6/2001	11/13/2001	1.82E-02	+/-	2.87E-03
11/13/2001	11/20/2001	5.58E-02	+/-	3.31E-03
11/20/2001	11/27/2001	3.51E-02	+/-	3.17E-03
11/27/2001	12/4/2001	2.82E-02	+/-	3.04E-03
12/4/2001	12/11/2001	3.67E-02	+/-	3.07E-03
12/11/2001	12/18/2001	3.10E-02	+/-	3.06E-03
12/18/2001	12/26/2001	2.96E-02	+/-	2.69E-03
12/26/2001	1/2/2002	2.10E-02	+/-	2.95E-03

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-4 FIRST QUARTER

Start Date	End Date	Activity		
1/4/2001	1/9/2001	3.02E-02	+/-	3.52E-03
1/9/2001	1/17/2001	3.56E-02	+/-	2.42E-03
1/17/2001	1/23/2001	3.31E-02	+/-	3.12E-03
1/23/2001	1/30/2001	2.68E-02	+/-	2.58E-03
1/30/2001	2/6/2001	2.90E-02	+/-	2.15E-03
2/6/2001	2/13/2001	1.83E-02	+/-	2.60E-03
2/13/2001	2/20/2001	3.18E-02	+/-	2.70E-03
2/20/2001	2/27/2001	2.89E-02	+/-	2.33E-03
2/27/2001	3/6/2001	2.72E-02	+/-	2.43E-03
3/6/2001	3/13/2001	1.38E-02	+/-	2.06E-03
3/13/2001	3/20/2001	1.84E-02	+/-	1.94E-03
3/20/2001	3/27/2001	2.28E-02	+/-	1.84E-03
3/27/2001	4/3/2001	1.87E-02	+/-	2.77E-03

API-4 SECOND QUARTER

Start Date	End Date	Activity		
4/3/2001	4/10/2001	2.17E-02	+/-	2.91E-03
4/10/2001	4/17/2001	1.77E-02	+/-	2.47E-03
4/17/2001	4/24/2001	2.11E-02	+/-	2.42E-03
4/24/2001	5/1/2001	2.94E-02	+/-	2.60E-03
5/1/2001	5/8/2001	2.72E-02	+/-	2.08E-03
5/8/2001	5/15/2001	2.11E-02	+/-	2.33E-03
5/15/2001	5/22/2001	2.33E-02	+/-	2.36E-03
5/22/2001	5/29/2001	1.20E-02	+/-	1.74E-03
5/29/2001	6/5/2001	1.47E-02	+/-	2.09E-03
6/5/2001	6/12/2001	1.98E-02	+/-	2.36E-03
6/12/2001	6/19/2001	2.34E-02	+/-	2.02E-03
6/19/2001	6/26/2001	1.86E-02	+/-	2.31E-03
6/26/2001	7/3/2001	2.76E-02	+/-	2.56E-03

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-4 THIRD QUARTER

Start Date	End Date	Activity		
7/3/2001	7/10/2001	2.65E-02	+/-	2.77E-03
7/10/2001	7/18/2001	2.42E-02	+/-	2.48E-03
7/18/2001	7/24/2001	4.16E-02	+/-	2.52E-03
7/24/2001	7/31/2001	1.82E-02	+/-	2.30E-03
7/31/2001	8/7/2001	2.90E-02	+/-	2.70E-03
8/7/2001	8/14/2001	2.90E-02	+/-	2.86E-03
8/14/2001	8/21/2001	2.25E-02	+/-	2.45E-03
8/21/2001	8/28/2001	2.53E-02	+/-	2.84E-03
8/28/2001	9/4/2001	2.58E-02	+/-	2.56E-03
9/4/2001	9/11/2001	1.75E-02	+/-	2.25E-03
9/11/2001	9/18/2001	2.31E-02	+/-	2.51E-03
9/18/2001	9/25/2001	2.87E-02	+/-	2.68E-03
9/25/2001	10/2/2001	1.73E-02	+/-	2.41E-03

API-4 FOURTH QUARTER

Start Date	End Date	Activity		
10/2/2001	10/9/2001	2.40E-02	+/-	2.63E-03
10/9/2001	10/16/2001	2.14E-02	+/-	2.51E-03
10/16/2001	10/23/2001	2.25E-02	+/-	2.63E-03
10/23/2001	10/30/2001	1.75E-02	+/-	2.41E-03
10/30/2001	11/6/2001	2.28E-02	+/-	2.55E-03
11/6/2001	11/13/2001	2.53E-02	+/-	2.88E-03
11/13/2001	11/20/2001	6.54E-02	+/-	3.40E-03
11/20/2001	11/27/2001	3.05E-02	+/-	2.87E-03
11/27/2001	12/4/2001	2.75E-02	+/-	2.97E-03
12/4/2001	12/11/2001	3.53E-02	+/-	2.53E-03
12/11/2001	12/18/2001	2.61E-02	+/-	2.53E-03
12/18/2001	12/26/2001	2.72E-02	+/-	2.61E-03
12/26/2001	1/2/2002	2.49E-02	+/-	2.82E-03

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-5 FIRST QUARTER

Start Date	End Date	Activity		
1/4/2001	1/9/2001	3.21E-02	+/-	3.66E-03
1/9/2001	1/17/2001	3.73E-02	+/-	2.53E-03
1/17/2001	1/23/2001	4.01E-02	+/-	3.22E-03
1/23/2001	1/30/2001	3.29E-02	+/-	2.82E-03
1/30/2001	2/6/2001	3.21E-02	+/-	2.27E-03
2/6/2001	2/13/2001	2.57E-02	+/-	2.80E-03
2/13/2001	2/20/2001	3.81E-02	+/-	2.93E-03
2/20/2001	2/27/2001	3.26E-02	+/-	2.52E-03
2/27/2001	3/6/2001	3.58E-02	+/-	2.76E-03
3/6/2001	3/13/2001	1.81E-02	+/-	2.31E-03
3/13/2001	3/20/2001	2.12E-02	+/-	2.10E-03
3/20/2001	3/27/2001	2.13E-02	+/-	1.98E-03
3/27/2001	4/3/2001	2.24E-02	+/-	3.03E-03

API-5 SECOND QUARTER

Start Date	End Date	Activity		
4/3/2001	4/10/2001	2.51E-02	+/-	3.19E-03
4/10/2001	4/17/2001	1.66E-02	+/-	2.61E-03
4/17/2001	4/24/2001	2.82E-02	+/-	2.78E-03
4/24/2001	5/1/2001	3.26E-02	+/-	2.42E-03
5/1/2001	5/8/2001	2.88E-02	+/-	2.46E-03
5/8/2001	5/15/2001	2.15E-02	+/-	2.02E-03
5/15/2001	5/22/2001	2.20E-02	+/-	2.04E-03
5/22/2001	5/29/2001	1.08E-02	+/-	1.75E-03
5/29/2001	6/5/2001	9.10E-03	+/-	1.93E-03
6/5/2001	6/12/2001	1.70E-02	+/-	2.29E-03
6/12/2001	6/19/2001	2.47E-02	+/-	1.94E-03
6/19/2001	6/26/2001	2.31E-02	+/-	2.55E-03
6/26/2001	7/3/2001	2.93E-02	+/-	2.52E-03

FERMI 2
AIR PARTICULATE GROSS BETA
(pCi/cubic meter)

API-5 THIRD QUARTER

Start Date	End Date	Activity		
7/3/2001	7/10/2001	2.29E-02	+/-	2.61E-03
7/10/2001	7/18/2001	2.01E-02	+/-	2.37E-03
7/18/2001	7/24/2001	3.68E-02	+/-	2.37E-03
7/24/2001	7/31/2001	2.12E-02	+/-	2.39E-03
7/31/2001	8/7/2001	2.64E-02	+/-	2.63E-03
8/7/2001	8/14/2001	3.27E-02	+/-	2.82E-03
8/14/2001	8/21/2001	2.17E-02	+/-	2.26E-03
8/21/2001	8/28/2001	2.70E-02	+/-	2.59E-03
8/28/2001	9/4/2001	2.40E-02	+/-	2.32E-03
9/4/2001	9/11/2001	2.52E-02	+/-	2.65E-03
9/11/2001	9/18/2001	2.38E-02	+/-	2.29E-03
9/18/2001	9/25/2001	2.64E-02	+/-	2.43E-03
9/25/2001	10/2/2001	1.42E-02	+/-	2.14E-03

API-5 FOURTH QUARTER

Start Date	End Date	Activity		
10/2/2001	10/9/2001	2.18E-02	+/-	2.29E-03
10/9/2001	10/16/2001	1.69E-02	+/-	2.17E-03
10/16/2001	10/23/2001	2.66E-02	+/-	2.47E-03
10/23/2001	10/30/2001	2.27E-02	+/-	2.56E-03
10/30/2001	11/6/2001	(a)		
11/6/2001	11/13/2001	2.37E-02	+/-	2.55E-03
11/13/2001	11/20/2001	6.23E-02	+/-	2.93E-03
11/20/2001	11/27/2001	2.87E-02	+/-	2.53E-03
11/27/2001	12/4/2001	2.95E-02	+/-	2.56E-03
12/4/2001	12/11/2001	4.00E-02	+/-	2.94E-03
12/11/2001	12/18/2001	2.26E-02	+/-	2.77E-03
12/18/2001	12/26/2001	2.21E-02	+/-	1.83E-03
12/26/2001	1/2/2002	1.98E-02	+/-	2.71E-03

(a) Sample not collected see Appendix D, Program Execution.

FERMI 2
AIR IODINE – 131
(pCi/cubic meter)

API-1 FIRST QUARTER

Start Date	End Date	Activity
1/4/2001	1/9/2001	< 5.39E-02
1/9/2001	1/17/2001	< 5.01E-02
1/17/2001	1/23/2001	< 5.15E-02
1/23/2001	1/30/2001	< 5.76E-02
1/30/2001	2/6/2001	< 4.31E-02
2/7/2001	2/13/2001	< 3.34E-02
2/13/2001	2/20/2001	< 5.55E-02
2/20/2001	2/27/2001	< 3.86E-02
2/27/2001	3/6/2001	< 4.03E-02
3/6/2001	3/13/2001	< 4.69E-02
3/13/2001	3/20/2001	(a)
3/21/2001	3/27/2001	< 2.70E-02
3/27/2001	4/3/2001	< 3.04E-02

API-1 SECOND QUARTER

Start Date	End Date	Activity
4/3/2001	4/10/2001	< 4.77E-02
4/10/2001	4/17/2001	< 3.75E-02
4/17/2001	4/24/2001	< 3.93E-02
4/24/2001	5/1/2001	< 3.65E-02
5/1/2001	5/8/2001	< 5.14E-02
5/8/2001	5/15/2001	< 2.97E-02
5/15/2001	5/22/2001	< 4.24E-02
5/22/2001	5/29/2001	< 6.70E-02
5/29/2001	6/5/2001	< 5.12E-02
6/5/2001	6/12/2001	< 4.40E-02
6/12/2001	6/19/2001	< 5.07E-02
6/19/2001	6/26/2001	< 4.39E-02
6/26/2001	7/3/2001	< 5.09E-02

(a) Sample not collected see Appendix D. Program Execution.

FERMI 2
AIR IODINE – 131
(pCi/cubic meter)

API-1 THIRD QUARTER

Start Date	End Date	Activity
7/3/2001	7/11/2001	(a)
7/11/2001	7/18/2001	< 3.78E-02
7/18/2001	7/24/2001	< 5.28E-02
7/24/2001	7/31/2001	< 5.03E-02
7/31/2001	8/7/2001	< 4.87E-02
8/7/2001	8/14/2001	< 5.88E-02
8/14/2001	8/21/2001	< 5.90E-02
8/21/2001	8/28/2001	< 4.68E-02
8/28/2001	9/4/2001	< 5.97E-02
9/4/2001	9/11/2001	< 5.19E-02
9/11/2001	9/18/2001	< 4.38E-02
9/18/2001	9/25/2001	< 5.47E-02
9/25/2001	10/2/2001	< 5.58E-02

API-1 FOURTH QUARTER

Start Date	End Date	Activity
10/2/2001	10/9/2001	< 5.48E-02
10/9/2001	10/16/2001	< 3.00E-02
10/16/2001	10/23/2001	< 6.15E-02
10/23/2001	10/30/2001	< 6.96E-02
10/30/2001	11/6/2001	< 6.23E-02
11/6/2001	11/13/2001	< 4.22E-02
11/13/2001	11/20/2001	< 5.66E-02
11/20/2001	11/27/2001	< 4.46E-02
11/27/2001	12/4/2001	< 6.34E-02
12/4/2001	12/11/2001	< 6.47E-02
12/11/2001	12/18/2001	< 4.54E-02
12/18/2001	12/26/2001	< 5.24E-02
12/26/2001	1/2/2002	< 3.98E-02

(a) Sample not counted see Appendix D, Program Execution.

FERMI 2
AIR IODINE – 131
(pCi/cubic meter)

API-2 FIRST QUARTER

Start Date	End Date	Activity
1/4/2001	1/9/2001	< 4.74E-02
1/9/2001	1/17/2001	< 3.97E-02
1/17/2001	1/23/2001	< 4.52E-02
1/23/2001	1/30/2001	< 6.58E-02
1/30/2001	2/6/2001	< 3.03E-02
2/6/2001	2/13/2001	< 4.16E-02
2/13/2001	2/20/2001	< 4.78E-02
2/20/2001	2/27/2001	< 5.34E-02
2/27/2001	3/6/2001	< 2.88E-02
3/6/2001	3/13/2001	< 4.66E-02
3/13/2001	3/20/2001	< 5.10E-02
3/20/2001	3/27/2001	< 2.40E-02
3/27/2001	4/3/2001	< 3.91E-02

API-2 SECOND QUARTER

Start Date	End Date	Activity
4/3/2001	4/10/2001	< 3.94E-02
4/10/2001	4/17/2001	< 4.22E-02
4/17/2001	4/24/2001	< 4.22E-02
4/24/2001	5/1/2001	< 3.69E-02
5/1/2001	5/8/2001	< 5.34E-02
5/8/2001	5/15/2001	< 2.52E-02
5/15/2001	5/22/2001	< 5.64E-02
5/22/2001	5/29/2001	< 6.45E-02
5/29/2001	6/5/2001	< 1.77E-02
6/5/2001	6/12/2001	< 3.94E-02
6/12/2001	6/19/2001	< 2.74E-02
6/19/2001	6/26/2001	< 4.52E-02
6/26/2001	7/3/2001	< 5.47E-02

FERMI 2
AIR IODINE – 131
(pCi/cubic meter)

API-2 THIRD QUARTER

Start Date	End Date	Activity
7/3/2001	7/10/2001	< 5.60E-02
7/10/2001	7/18/2001	< 3.88E-02
7/18/2001	7/24/2001	< 5.19E-02
7/24/2001	7/31/2001	< 4.41E-02
7/31/2001	8/7/2001	< 4.27E-02
8/7/2001	8/14/2001	< 5.33E-02
8/14/2001	8/21/2001	< 5.62E-02
8/21/2001	8/28/2001	< 4.20E-02
8/28/2001	9/4/2001	< 5.56E-02
9/4/2001	9/11/2001	< 6.44E-02
9/11/2001	9/18/2001	< 5.08E-02
9/18/2001	9/25/2001	< 5.51E-02
9/25/2001	10/2/2001	(a)

API-2 FOURTH QUARTER

Start Date	End Date	Activity
10/2/2001	10/5/2001	< 4.39E-02
10/9/2001	10/16/2001	< 5.42E-02
10/16/2001	10/23/2001	< 6.51E-02
10/23/2001	10/30/2001	< 5.87E-02
10/30/2001	11/6/2001	< 6.75E-02
11/6/2001	11/13/2001	< 4.13E-02
11/13/2001	11/20/2001	< 6.57E-02
11/20/2001	11/27/2001	< 5.26E-02
11/27/2001	12/4/2001	< 6.30E-02
12/4/2001	12/11/2001	< 3.98E-02
12/11/2001	12/18/2001	< 4.54E-02
12/18/2001	12/26/2001	< 6.89E-02
12/26/2001	1/2/2002	< 3.87E-02

(a) Sample not counted see Appendix D, Program Execution.

FERMI 2
AIR IODINE - 131
(pCi/cubic meter)

API-3 FIRST QUARTER

Start Date	End Date	Activity
1/4/2001	1/9/2001	< 3.93E-02
1/9/2001	1/17/2001	< 3.46E-02
1/17/2001	1/23/2001	< 4.02E-02
1/23/2001	1/30/2001	< 5.10E-02
1/30/2001	2/6/2001	< 3.89E-02
2/6/2001	2/13/2001	< 3.91E-02
2/13/2001	2/20/2001	< 4.68E-02
2/20/2001	2/27/2001	< 4.90E-02
2/27/2001	3/6/2001	< 3.00E-02
3/6/2001	3/13/2001	< 4.80E-02
3/13/2001	3/20/2001	< 4.83E-02
3/20/2001	3/27/2001	< 2.74E-02
3/27/2001	4/3/2001	< 3.06E-02

API-3 SECOND QUARTER

Start Date	End Date	Activity
4/3/2001	4/10/2001	< 2.40E-02
4/10/2001	4/17/2001	< 2.76E-02
4/17/2001	4/24/2001	< 4.39E-02
4/24/2001	5/1/2001	< 3.20E-02
5/1/2001	5/8/2001	< 5.32E-02
5/8/2001	5/15/2001	< 3.94E-02
5/15/2001	5/22/2001	< 3.28E-02
5/22/2001	5/29/2001	< 6.56E-02
5/29/2001	6/5/2001	< 4.62E-02
6/5/2001	6/12/2001	< 3.29E-02
6/12/2001	6/19/2001	< 5.29E-02
6/19/2001	6/26/2001	< 3.91E-02
6/26/2001	7/3/2001	< 4.56E-02

FERMI 2
AIR IODINE - 131
(pCi/cubic meter)

API-3 THIRD QUARTER

Start Date	End Date	Activity
7/3/2001	7/10/2001	< 4.35E-02
7/10/2001	7/18/2001	< 4.64E-02
7/18/2001	7/24/2001	< 4.58E-02
7/24/2001	7/31/2001	< 5.15E-02
7/31/2001	8/7/2001	< 4.61E-02
8/7/2001	8/14/2001	< 6.00E-02
8/14/2001	8/21/2001	< 5.83E-02
8/21/2001	8/28/2001	< 4.05E-02
8/28/2001	9/4/2001	< 6.01E-02
9/4/2001	9/11/2001	< 6.06E-02
9/11/2001	9/18/2001	< 5.40E-02
9/18/2001	9/25/2001	< 5.54E-02
9/25/2001	10/2/2001	< 6.39E-02

API-3 FOURTH QUARTER

Start Date	End Date	Activity
10/2/2001	10/9/2001	< 5.61E-02
10/9/2001	10/16/2001	< 5.83E-02
10/16/2001	10/23/2001	< 6.93E-02
10/23/2001	10/30/2001	< 6.66E-02
10/30/2001	11/6/2001	< 6.87E-02
11/6/2001	11/13/2001	< 3.92E-02
11/13/2001	11/20/2001	< 5.42E-02
11/20/2001	11/27/2001	< 5.27E-02
11/27/2001	12/4/2001	< 6.58E-02
12/4/2001	12/11/2001	< 2.91E-02
12/11/2001	12/18/2001	< 4.99E-02
12/18/2001	12/26/2001	< 6.30E-02
12/26/2001	1/2/2002	< 4.01E-02

FERMI 2
AIR IODINE - 131
(pCi/cubic meter)

API-4 FIRST QUARTER

Start Date	End Date	Activity
1/4/2001	1/9/2001	< 6.22E-02
1/9/2001	1/17/2001	< 3.82E-02
1/17/2001	1/23/2001	< 4.57E-02
1/23/2001	1/30/2001	< 6.11E-02
1/30/2001	2/6/2001	< 4.00E-02
2/6/2001	2/13/2001	< 3.72E-02
2/13/2001	2/20/2001	< 5.90E-02
2/20/2001	2/27/2001	< 3.07E-02
2/27/2001	3/6/2001	< 3.60E-02
3/6/2001	3/13/2001	< 5.63E-02
3/13/2001	3/20/2001	< 5.59E-02
3/20/2001	3/27/2001	< 3.36E-02
3/27/2001	4/3/2001	< 3.44E-02

API-4 SECOND QUARTER

Start Date	End Date	Activity
4/3/2001	4/10/2001	< 4.34E-02
4/10/2001	4/17/2001	< 4.51E-02
4/17/2001	4/24/2001	< 4.14E-02
4/24/2001	5/1/2001	< 4.09E-02
5/1/2001	5/8/2001	< 4.56E-02
5/8/2001	5/15/2001	< 2.42E-02
5/15/2001	5/22/2001	< 4.86E-02
5/22/2001	5/29/2001	< 5.71E-02
5/29/2001	6/5/2001	< 4.03E-02
6/5/2001	6/12/2001	< 4.86E-02
6/12/2001	6/19/2001	< 5.07E-02
6/19/2001	6/26/2001	< 4.40E-02
6/26/2001	7/3/2001	< 4.48E-02

FERMI 2
AIR IODINE - 131
(pCi/cubic meter)

API-4 THIRD QUARTER

Start Date	End Date	Activity
7/3/2001	7/10/2001	< 6.72E-02
7/10/2001	7/18/2001	< 4.18E-02
7/18/2001	7/24/2001	< 6.14E-02
7/24/2001	7/31/2001	< 3.96E-02
7/31/2001	8/7/2001	< 5.74E-02
8/7/2001	8/14/2001	< 5.37E-02
8/14/2001	8/21/2001	< 5.92E-02
8/21/2001	8/28/2001	< 5.57E-02
8/28/2001	9/4/2001	< 5.76E-02
9/4/2001	9/11/2001	< 5.41E-02
9/11/2001	9/18/2001	< 5.17E-02
9/18/2001	9/25/2001	< 5.08E-02
9/25/2001	10/2/2001	< 5.33E-02

API-4 FOURTH QUARTER

Start Date	End Date	Activity
10/2/2001	10/9/2001	< 5.19E-02
10/9/2001	10/16/2001	< 5.02E-02
10/16/2001	10/23/2001	< 6.66E-02
10/23/2001	10/30/2001	< 6.03E-02
10/30/2001	11/6/2001	< 5.63E-02
11/6/2001	11/13/2001	< 3.88E-02
11/13/2001	11/20/2001	< 6.29E-02
11/20/2001	11/27/2001	< 5.13E-02
11/27/2001	12/4/2001	< 5.67E-02
12/4/2001	12/11/2001	< 6.53E-02
12/11/2001	12/18/2001	< 4.82E-02
12/18/2001	12/26/2001	< 6.62E-02
12/26/2001	1/2/2002	< 3.46E-02

FERMI 2
AIR IODINE – 131
(pCi/cubic meter)

API-5 FIRST QUARTER

Start Date	End Date	Activity
1/4/2001	1/9/2001	< 5.74E-02
1/9/2001	1/17/2001	< 3.76E-02
1/17/2001	1/23/2001	< 5.08E-02
1/23/2001	1/30/2001	< 5.79E-02
1/30/2001	2/6/2001	< 3.64E-02
2/6/2001	2/13/2001	< 3.59E-02
2/13/2001	2/20/2001	< 5.43E-02
2/20/2001	2/27/2001	< 6.06E-02
2/27/2001	3/6/2001	< 4.07E-02
3/6/2001	3/13/2001	< 4.84E-02
3/13/2001	3/20/2001	< 6.34E-02
3/20/2001	3/27/2001	< 3.53E-02
3/27/2001	4/3/2001	< 2.90E-02

API-5 SECOND QUARTER

Start Date	End Date	Activity
4/3/2001	4/10/2001	< 4.32E-02
4/10/2001	4/17/2001	< 4.38E-02
4/17/2001	4/24/2001	< 4.18E-02
4/24/2001	5/1/2001	< 3.72E-02
5/1/2001	5/8/2001	< 5.12E-02
5/8/2001	5/15/2001	< 5.23E-02
5/15/2001	5/22/2001	< 3.72E-02
5/22/2001	5/29/2001	< 5.96E-02
5/29/2001	6/5/2001	< 3.47E-02
6/5/2001	6/12/2001	< 4.53E-02
6/12/2001	6/19/2001	< 4.74E-02
6/19/2001	6/26/2001	< 4.11E-02
6/26/2001	7/3/2001	< 4.42E-02

FERMI 2
AIR IODINE – 131
(pCi/cubic meter)

API-5 THIRD QUARTER

Start Date	End Date	Activity
7/3/2001	7/10/2001	< 5.91E-02
7/10/2001	7/18/2001	< 4.17E-02
7/18/2001	7/24/2001	< 2.77E-02
7/24/2001	7/31/2001	< 4.49E-02
7/31/2001	8/7/2001	< 5.51E-02
8/7/2001	8/14/2001	< 5.32E-02
8/14/2001	8/21/2001	< 5.60E-02
8/21/2001	8/28/2001	< 5.20E-02
8/28/2001	9/4/2001	< 5.64E-02
9/4/2001	9/11/2001	< 5.04E-02
9/11/2001	9/18/2001	< 4.58E-02
9/18/2001	9/25/2001	< 4.93E-02
9/25/2001	10/2/2001	< 4.84E-02

API-5 FOURTH QUARTER

Start Date	End Date	Activity
10/2/2001	10/9/2001	< 5.24E-02
10/9/2001	10/16/2001	< 4.92E-02
10/16/2001	10/23/2001	< 6.50E-02
10/23/2001	10/30/2001	< 6.64E-02
10/30/2001	11/6/2001	(a)
11/6/2001	11/13/2001	< 3.45E-02
11/13/2001	11/20/2001	< 5.81E-02
11/20/2001	11/27/2001	< 4.78E-02
11/27/2001	12/4/2001	< 5.35E-02
12/4/2001	12/11/2001	< 6.40E-02
12/11/2001	12/18/2001	< 4.91E-02
12/18/2001	12/26/2001	< 4.94E-02
12/26/2001	1/2/2002	< 3.43E-02

(a) Sample not counted see Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-1 (indicator)
(pCi/cubic meter)

Nuclide	First Quarter (a)				Second Quarter			
BE-7	<	8.18E-02				9.05E-02	+/-	2.09E-02
K-40	<	3.76E-02			<	2.73E-02		
MN-54	<	2.92E-03			<	3.00E-03		
CO-58	<	5.59E-03			<	3.99E-03		
FE-59	<	2.96E-02			<	8.33E-03		
CO-60	<	2.94E-03			<	2.11E-03		
ZN-65	<	5.62E-03			<	5.91E-03		
ZR-95	<	1.11E-02			<	6.53E-03		
RU-103	<	7.61E-03			<	4.80E-03		
RU-106	<	2.61E-02			<	1.70E-02		
CS-134	<	3.01E-03			<	1.70E-03		
CS-137	<	2.44E-03			<	1.99E-03		
BA-140	<	6.56E-02			<	1.43E-01		
CE-141	<	1.05E-02			<	6.53E-03		
CE-144	<	8.81E-03			<	7.29E-03		
TH-228	<	1.09E-02			<	5.76E-03		

API-1 (indicator)
(pCi/cubic meter)

Nuclide	Third Quarter (a)				Fourth Quarter			
BE-7		1.03E-01	+/-	1.80E-02		7.62E-02	+/-	1.41E-02
K-40	<	2.34E-02			<	2.16E-02		
MN-54	<	1.82E-03			<	2.01E-03		
CO-58	<	3.77E-03			<	4.05E-03		
FE-59	<	1.49E-02			<	9.59E-03		
CO-60	<	3.18E-03			<	2.33E-03		
ZN-65	<	6.59E-03			<	4.81E-03		
ZR-95	<	4.23E-03			<	5.77E-03		
RU-103	<	4.25E-03			<	5.21E-03		
RU-106	<	2.07E-02			<	1.15E-02		
CS-134	<	2.20E-03			<	2.16E-03		
CS-137	<	1.79E-03			<	1.48E-03		
BA-140	<	8.63E-02			<	6.05E-02		
CE-141	<	5.87E-03			<	5.42E-03		
CE-144	<	6.35E-03			<	7.27E-03		
TH-228	<	9.03E-03			<	5.58E-03		

(a) See Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-2 (indicator)
(pCi/cubic meter)

Nuclide	First Quarter				Second Quarter			
BE-7		1.07E-01	+/-	2.24E-02		7.70E-02	+/-	1.60E-02
K-40	<	3.70E-02			<	3.11E-02		
MN-54	<	2.25E-03			<	1.64E-03		
CO-58	<	3.88E-03			<	2.69E-03		
FE-59	<	7.16E-03			<	1.75E-02		
CO-60	<	2.59E-03			<	2.54E-03		
ZN-65	<	8.13E-03			<	4.35E-03		
ZR-95	<	8.17E-03			<	5.95E-03		
RU-103	<	7.48E-03			<	6.45E-03		
RU-106	<	2.34E-02			<	1.70E-02		
CS-134	<	1.67E-03			<	1.83E-03		
CS-137	<	2.45E-03			<	1.65E-03		
BA-140	<	1.57E-01			<	6.75E-02		
CE-141	<	9.89E-03			<	6.90E-03		
CE-144	<	7.32E-03			<	5.09E-03		
TH-228	<	9.28E-03			<	6.45E-03		

API-2 (indicator)
(pCi/cubic meter)

Nuclide	Third Quarter (a)				Fourth Quarter			
BE-7		7.85E-02	+/-	1.77E-02		8.28E-02	+/-	1.54E-02
K-40	<	3.94E-02			<	2.96E-02		
MN-54	<	3.28E-03			<	1.75E-03		
CO-58	<	3.63E-03			<	2.79E-03		
FE-59	<	1.41E-02			<	1.76E-02		
CO-60	<	2.60E-03			<	3.07E-03		
ZN-65	<	7.86E-03			<	6.92E-03		
ZR-95	<	5.88E-03			<	7.02E-03		
RU-103	<	5.02E-03			<	3.95E-03		
RU-106	<	1.63E-02			<	1.40E-02		
CS-134	<	2.11E-03			<	1.65E-03		
CS-137	<	2.28E-03			<	1.73E-03		
BA-140	<	8.19E-02			<	6.87E-02		
CE-141	<	6.14E-03			<	5.26E-03		
CE-144	<	6.91E-03			<	7.11E-03		
TH-228	<	7.73E-03			<	7.37E-03		

(a) See Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-3 (indicator)
(pCi/cubic meter)

Nuclide	First Quarter				Second Quarter			
BE-7		5.61E-02	+/-	1.70E-02		9.19E-02	+/-	1.70E-02
K-40	<	2.08E-02			<	2.68E-02		
MN-54	<	2.70E-03			<	2.12E-03		
CO-58	<	4.17E-03			<	3.85E-03		
FE-59	<	1.97E-02			<	1.71E-02		
CO-60	<	2.85E-03			<	1.75E-03		
ZN-65	<	6.67E-03			<	5.46E-03		
ZR-95	<	9.21E-03			<	6.99E-03		
RU-103	<	6.37E-03			<	4.37E-03		
RU-106	<	8.48E-03			<	1.39E-02		
CS-134	<	5.53E-04			<	9.30E-04		
CS-137	<	2.06E-03			<	1.46E-03		
BA-140	<	1.15E-01			<	3.01E-02		
CE-141	<	8.91E-03			<	5.17E-03		
CE-144	<	8.66E-03			<	5.38E-03		
TH-228	<	7.96E-03			<	6.23E-03		

API-3 (indicator)
(pCi/cubic meter)

Nuclide	Third Quarter				Fourth Quarter			
BE-7		7.38E-02	+/-	1.55E-02		6.07E-02	+/-	1.85E-02
K-40	<	2.63E-02			<	2.99E-02		
MN-54	<	2.43E-03			<	2.05E-03		
CO-58	<	2.77E-03			<	4.83E-03		
FE-59	<	1.40E-02			<	1.20E-02		
CO-60	<	3.00E-03			<	2.62E-03		
ZN-65	<	7.30E-03			<	9.17E-03		
ZR-95	<	7.00E-03			<	4.05E-03		
RU-103	<	5.26E-03			<	6.26E-03		
RU-106	<	1.78E-02			<	1.60E-02		
CS-134	<	1.61E-03			<	1.94E-03		
CS-137	<	1.14E-03			<	2.12E-03		
BA-140	<	2.38E-02			<	2.00E-02		
CE-141	<	5.94E-03			<	6.79E-03		
CE-144	<	6.43E-03			<	1.03E-02		
TH-228	<	7.89E-03			<	6.98E-03		

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-4 (control)
(pCi/cubic meter)

Nuclide	First Quarter				Second Quarter			
BE-7		8.79E-02	+/-	1.92E-02		5.35E-02	+/-	1.71E-02
K-40	<	2.92E-02			<	2.67E-02		
MN-54	<	2.98E-03			<	2.77E-03		
CO-58	<	2.71E-03			<	3.91E-03		
FE-59	<	2.33E-02			<	2.35E-02		
CO-60	<	2.28E-03			<	2.07E-03		
ZN-65	<	1.04E-02			<	5.00E-03		
ZR-95	<	7.15E-03			<	7.75E-03		
RU-103	<	7.90E-03			<	6.55E-03		
RU-106	<	2.03E-02			<	2.04E-02		
CS-134	<	3.07E-03			<	2.33E-03		
CS-137	<	2.67E-03			<	1.95E-03		
BA-140	<	1.44E-01			<	1.56E-01		
CE-141	<	8.47E-03			<	7.47E-03		
CE-144	<	7.51E-03			<	7.55E-03		
TH-228	<	7.63E-03			<	7.42E-03		

API-4 (control)
(pCi/cubic meter)

Nuclide	Third Quarter				Fourth Quarter			
BE-7		5.48E-02	+/-	1.64E-02		7.05E-02	+/-	1.45E-02
K-40	<	3.54E-02			<	2.48E-02		
MN-54	<	2.27E-03			<	2.13E-03		
CO-58	<	3.27E-03			<	3.37E-03		
FE-59	<	2.10E-02			<	1.66E-02		
CO-60	<	3.39E-03			<	3.22E-03		
ZN-65	<	3.87E-03			<	4.61E-03		
ZR-95	<	7.16E-03			<	6.60E-03		
RU-103	<	4.61E-03			<	3.71E-03		
RU-106	<	2.00E-02			<	1.53E-02		
CS-134	<	2.12E-03			<	1.79E-03		
CS-137	<	1.74E-03			<	1.99E-03		
BA-140	<	8.19E-02			<	1.88E-02		
CE-141	<	6.03E-03			<	5.96E-03		
CE-144	<	7.84E-03			<	5.75E-03		
TH-228	<	7.02E-03			<	6.16E-03		

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-5 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter				Second Quarter			
BE-7		9.57E-02	+/-	2.09E-02		1.13E-01	+/-	1.97E-02
K-40	<	3.03E-02			<	3.46E-02		
MN-54	<	1.67E-03			<	2.43E-03		
CO-58	<	4.23E-03			<	3.56E-03		
FE-59	<	2.89E-02			<	1.79E-02		
CO-60	<	9.36E-04			<	2.33E-03		
ZN-65	<	8.97E-03			<	4.47E-03		
ZR-95	<	1.01E-02			<	5.06E-03		
RU-103	<	8.13E-03			<	7.67E-03		
RU-106	<	2.40E-02			<	1.32E-02		
CS-134	<	2.27E-03			<	2.85E-03		
CS-137	<	2.30E-03			<	1.80E-03		
BA-140	<	1.92E-01			<	7.99E-02		
CE-141	<	9.03E-03			<	8.70E-03		
CE-144	<	8.36E-03			<	7.16E-03		
TH-228	<	9.54E-03			<	5.63E-03		

API-5 (Indicator)
(pCi/cubic meter)

Nuclide	Third Quarter (a)				Fourth Quarter			
BE-7		6.44E-02	+/-	1.86E-02		7.41E-02	+/-	1.67E-02
K-40	<	2.90E-02			<	1.81E-02		
MN-54	<	1.94E-03			<	2.91E-03		
CO-58	<	4.77E-03			<	2.06E-03		
FE-59	<	2.01E-02			<	1.62E-02		
CO-60	<	2.51E-03			<	2.81E-03		
ZN-65	<	6.60E-03			<	5.82E-03		
ZR-95	<	5.60E-03			<	5.96E-03		
RU-103	<	3.36E-03			<	2.52E-03		
RU-106	<	1.73E-02			<	2.12E-02		
CS-134	<	2.01E-03			<	1.96E-03		
CS-137	<	1.65E-03			<	1.80E-03		
BA-140	<	6.26E-02			<	4.94E-02		
CE-141	<	6.43E-03			<	5.19E-03		
CE-144	<	5.82E-03			<	4.93E-03		
TH-228	<	7.67E-03			<	7.19E-03		

(a) See Appendix D, Program Execution.

FERMI 2
MILK ANALYSIS

M-2 (Indicator)
(pCi/liter)

Nuclide	25-JAN				15-FEB				24-MAR			
I-131	<	7.80E-01			<	4.88E-01			<	5.42E-01		
SR-89	<	7.58E+00			<	5.30E+00			<	8.91E+00		
SR-90	<	1.50E+00			<	1.60E+00			<	1.63E+00		
BE-7	<	4.53E+01			<	5.69E+01			<	4.88E+01		
K-40		1.32E+03	+/-	6.39E+01		1.48E+03	+/-	6.82E+01		1.41E+03	+/-	6.89E+01
MN-54	<	6.17E+00			<	5.68E+00			<	6.58E+00		
CO-58	<	5.22E+00			<	6.07E+00			<	5.84E+00		
FE-59	<	2.30E+01			<	1.80E+01			<	2.13E+01		
CO-60	<	7.96E+00			<	7.22E+00			<	7.56E+00		
ZN-65	<	1.78E+01			<	1.51E+01			<	1.60E+01		
ZR-95	<	1.00E+01			<	1.12E+01			<	1.04E+01		
RU-103	<	6.75E+00			<	6.32E+00			<	6.54E+00		
RU-106	<	4.94E+01			<	5.84E+01			<	6.09E+01		
CS-134	<	6.13E+00			<	6.76E+00			<	6.47E+00		
CS-137	<	6.12E+00			<	5.60E+00			<	5.69E+00		
BA-140	<	1.27E+01			<	1.01E+01			<	1.08E+01		
CE-141	<	1.18E+01			<	7.75E+00			<	7.68E+00		
CE-144	<	2.77E+01			<	2.73E+01			<	2.78E+01		
TH-228	<	2.38E+01			<	2.69E+01			<	2.83E+01		

Nuclide	19-APR				10-MAY				29-MAY			
I-131	<	9.93E-01			<	7.73E-01			<	8.32E-01		
SR-89	<	7.70E+00			<	5.79E+00			<	6.82E+00		
SR-90	<	1.36E+00			<	1.43E+00				1.67E+00	+/-	4.30E-01
BE-7	<	4.45E+01			<	5.07E+01			<	4.30E+01		
K-40		1.29E+03	+/-	6.43E+01		1.37E+03	+/-	6.92E+01		1.37E+03	+/-	5.75E+01
MN-54	<	6.11E+00			<	6.05E+00			<	4.64E+00		
CO-58	<	6.88E+00			<	7.07E+00			<	5.18E+00		
FE-59	<	2.18E+01			<	1.94E+01			<	1.68E+01		
CO-60	<	7.17E+00			<	6.92E+00			<	6.19E+00		
ZN-65	<	1.35E+01			<	1.61E+01			<	1.37E+01		
ZR-95	<	9.02E+00			<	1.05E+01			<	8.07E+00		
RU-103	<	6.77E+00			<	6.01E+00			<	5.35E+00		
RU-106	<	5.30E+01			<	5.31E+01			<	5.13E+01		
CS-134	<	6.31E+00			<	6.70E+00			<	4.73E+00		
CS-137	<	6.02E+00			<	6.82E+00			<	5.36E+00		
BA-140	<	1.04E+01			<	1.02E+01			<	9.38E+00		
CE-141	<	8.24E+00			<	8.57E+00			<	7.72E+00		
CE-144	<	3.07E+01			<	3.03E+01			<	2.65E+01		
TH-228	<	2.44E+01			<	2.50E+01			<	2.14E+01		

FERMI 2
MILK ANALYSIS

M-2 (Indicator)
(pCi/liter)

Nuclide	7-JUN				21-JUN				12-JUL			
I-131	<	9.09E-01			<	6.88E-01			<	8.70E-01		
SR-89	<	5.89E+00			<	7.62E+00			<	6.20E+00		
SR-90		1.65E+00	+/-	4.92E-01	<	1.43E+00				1.67E+00	+/-	4.78E-01
BE-7	<	5.67E+01			<	5.21E+01			<	3.74E+01		
K-40		1.33E+03	+/-	7.30E+01		1.35E+03	+/-	6.57E+01		1.33E+03	+/-	5.63E+01
MN-54	<	6.49E+00			<	6.86E+00			<	4.94E+00		
CO-58	<	7.03E+00			<	6.30E+00			<	5.20E+00		
FE-59	<	2.77E+01			<	2.58E+01			<	1.63E+01		
CO-60	<	8.24E+00			<	7.88E+00			<	6.38E+00		
ZN-65	<	1.86E+01			<	1.61E+01			<	1.35E+01		
ZR-95	<	1.23E+01			<	9.70E+00			<	7.57E+00		
RU-103	<	5.67E+00			<	6.34E+00			<	4.54E+00		
RU-106	<	5.87E+01			<	5.50E+01			<	4.94E+01		
CS-134	<	7.84E+00			<	7.05E+00			<	5.29E+00		
CS-137	<	6.91E+00			<	6.52E+00			<	5.15E+00		
BA-140	<	1.30E+01			<	1.50E+01			<	8.15E+00		
CE-141	<	9.25E+00			<	8.11E+00			<	7.58E+00		
CE-144	<	3.08E+01			<	2.80E+01			<	2.52E+01		
TH-228	<	2.54E+01			<	2.67E+01			<	2.02E+01		

Nuclide	26-JUL				9-AUG				23-AUG			
I-131	<	9.06E-01			<	9.79E-01			<	8.69E-01		
SR-89	<	4.84E+00			<	8.36E+00			<	6.40E+00		
SR-90		2.31E+00	+/-	4.15E-01		1.84E+00	+/-	5.59E-01	<	1.43E+00		
BE-7	<	3.83E+01			<	4.35E+01			<	5.23E+01		
K-40		1.35E+03	+/-	5.87E+01		1.48E+03	+/-	6.12E+01		1.42E+03	+/-	6.88E+01
MN-54	<	5.21E+00			<	5.38E+00			<	7.03E+00		
CO-58	<	4.88E+00			<	5.18E+00			<	7.06E+00		
FE-59	<	1.91E+01			<	2.02E+01			<	2.34E+01		
CO-60	<	6.79E+00			<	7.14E+00			<	8.22E+00		
ZN-65	<	1.66E+01			<	1.41E+01			<	3.88E+01		
ZR-95	<	9.30E+00			<	8.93E+00			<	1.17E+01		
RU-103	<	5.72E+00			<	5.41E+00			<	7.36E+00		
RU-106	<	4.69E+01			<	4.65E+01			<	5.85E+01		
CS-134	<	5.37E+00			<	5.24E+00			<	7.45E+00		
CS-137	<	5.87E+00			<	6.02E+00			<	6.94E+00		
BA-140	<	7.11E+00			<	7.80E+00			<	1.48E+01		
CE-141	<	7.57E+00			<	7.59E+00			<	9.16E+00		
CE-144	<	2.58E+01			<	2.66E+01			<	3.15E+01		
TH-228	<	2.32E+01			<	6.64E+01			<	2.86E+01		

FERMI 2
MILK ANALYSIS

M-2 (Indicator)
(pCi/liter)

Nuclide	20-SEP				27-SEP				11-OCT			
I-131	<	5.42E-01			<	8.51E-01			<	9.96E-01		
SR-89	<	5.70E+00			<	5.34E+00			<	8.54E+00		
SR-90	<	1.61E+00			<	1.80E+00				3.54E+00	+/-	5.78E-01
BE-7	<	3.39E+01			<	5.03E+01			<	4.59E+01		
K-40		1.48E+03	+/-	4.96E+01		1.43E+03	+/-	6.85E+01		1.39E+03	+/-	5.96E+01
MN-54	<	4.30E+00			<	6.64E+00			<	5.36E+00		
CO-58	<	4.37E+00			<	6.57E+00			<	5.52E+00		
FE-59	<	1.46E+01			<	2.27E+01			<	1.74E+01		
CO-60	<	5.11E+00			<	6.59E+00			<	6.43E+00		
ZN-65	<	1.33E+01			<	1.74E+01			<	3.00E+01		
ZR-95	<	6.83E+00			<	1.08E+01			<	1.03E+01		
RU-103	<	4.52E+00			<	6.19E+00			<	5.68E+00		
RU-106	<	3.75E+01			<	4.95E+01			<	4.98E+01		
CS-134	<	4.64E+00			<	5.76E+00			<	6.12E+00		
CS-137	<	4.33E+00			<	7.17E+00			<	5.90E+00		
BA-140	<	6.42E+00			<	1.08E+01			<	1.05E+01		
CE-141	<	9.93E+00			<	7.83E+00			<	8.13E+00		
CE-144	<	2.26E+01			<	2.71E+01			<	3.03E+01		
TH-228	<	1.41E+01			<	2.59E+01			<	2.02E+01		

Nuclide	18-OCT				29-NOV				20-DEC			
I-131	<	7.86E-01			<	7.77E-01			<	6.48E-01		
SR-89	<	7.60E+00			<	8.76E+00			<	6.99E+00		
SR-90	<	1.89E+00				2.73E+00	+/-	5.40E-01		1.62E+00	+/-	4.65E-01
BE-7	<	4.48E+01			<	5.51E+01			<	6.09E+01		
K-40		1.52E+03	+/-	6.21E+01		1.41E+03	+/-	6.16E+01		1.35E+03	+/-	6.87E+01
MN-54	<	5.20E+00			<	7.29E+00			<	7.55E+00		
CO-58	<	6.44E+00			<	6.59E+00			<	7.14E+00		
FE-59	<	1.94E+01			<	2.39E+01			<	2.17E+01		
CO-60	<	6.34E+00			<	7.90E+00			<	9.54E+00		
ZN-65	<	3.16E+01			<	2.17E+01			<	2.29E+01		
ZR-95	<	1.04E+01			<	1.05E+01			<	1.29E+01		
RU-103	<	6.05E+00			<	6.81E+00			<	7.92E+00		
RU-106	<	4.73E+01			<	5.79E+01			<	6.34E+01		
CS-134	<	5.97E+00			<	6.75E+00			<	6.73E+00		
CS-137	<	5.91E+00			<	6.53E+00			<	7.17E+00		
BA-140	<	8.80E+00			<	1.17E+01			<	1.12E+01		
CE-141	<	8.77E+00			<	1.16E+01			<	1.19E+01		
CE-144	<	2.87E+01			<	3.59E+01			<	4.04E+01		
TH-228	<	1.99E+01			<	2.59E+01			<	3.00E+01		

FERMI 2
MILK ANALYSIS

M-8 (Control)
(pCi/liter)

Nuclide	25-JAN				15-FEB				22-MAR			
I-131	<	6.16E-01			<	8.32E-01			<	4.97E-01		
SR-89	<	7.11E+00			<	5.58E+00			<	6.05E+00		
SR-90	<	1.41E+00			<	1.67E+00			<	1.33E+00		
BE-7	<	3.44E+01			<	3.59E+01			<	3.28E+01		
K-40		1.45E+03	+/-	4.83E+01		1.41E+03	+/-	4.81E+01		1.42E+03	+/-	4.80E+01
MN-54	<	3.84E+00			<	4.70E+00			<	4.73E+00		
CO-58	<	4.02E+00			<	4.45E+00			<	4.17E+00		
FE-59	<	1.51E+01			<	1.36E+01			<	1.29E+01		
CO-60	<	4.43E+00			<	5.48E+00			<	4.99E+00		
ZN-65	<	1.39E+01			<	1.08E+01			<	1.56E+01		
ZR-95	<	7.58E+00			<	7.31E+00			<	7.78E+00		
RU-103	<	4.63E+00			<	4.26E+00			<	4.22E+00		
RU-106	<	3.91E+01			<	3.90E+01			<	3.58E+01		
CS-134	<	3.59E+00			<	4.32E+00			<	4.89E+00		
CS-137	<	4.51E+00			<	4.70E+00			<	4.81E+00		
BA-140	<	6.32E+00			<	8.47E+00			<	7.51E+00		
CE-141	<	6.12E+00			<	6.32E+00			<	7.06E+00		
CE-144	<	2.24E+01			<	2.37E+01			<	2.37E+01		
TH-228	<	1.93E+01			<	1.82E+01			<	1.75E+01		

Nuclide	19-APR				10-MAY				29-MAY			
I-131	<	9.65E-01			<	7.91E-01			<	8.51E-01		
SR-89	<	6.32E+00			<	6.21E+00			<	6.78E+00		
SR-90	<	1.15E+00			<	1.54E+00			<	1.36E+00		
BE-7	<	4.63E+01			<	5.67E+01			<	4.51E+01		
K-40		1.31E+03	+/-	7.22E+01		1.30E+03	+/-	7.82E+01		1.07E+03	+/-	6.07E+01
MN-54	<	7.38E+00			<	8.20E+00			<	6.69E+00		
CO-58	<	6.26E+00			<	7.58E+00			<	5.82E+00		
FE-59	<	2.55E+01			<	2.56E+01			<	2.09E+01		
CO-60	<	7.50E+00			<	8.30E+00			<	7.82E+00		
ZN-65	<	1.84E+01			<	1.93E+01			<	1.40E+01		
ZR-95	<	1.10E+01			<	1.42E+01			<	1.04E+01		
RU-103	<	6.76E+00			<	7.51E+00			<	5.74E+00		
RU-106	<	5.83E+01			<	6.27E+01			<	5.98E+01		
CS-134	<	7.00E+00			<	7.29E+00			<	6.21E+00		
CS-137	<	7.04E+00			<	7.87E+00			<	6.84E+00		
BA-140	<	1.42E+01			<	1.33E+01			<	1.20E+01		
CE-141	<	7.90E+00			<	8.98E+00			<	7.94E+00		
CE-144	<	2.97E+01			<	3.38E+01			<	2.80E+01		
TH-228	<	2.69E+01			<	2.94E+01			<	2.61E+01		

FERMI 2
MILK ANALYSIS

M-8 (Control)
(pCi/liter)

Nuclide	7-JUN				21-JUN				6-JUL			
I-131	<	9.27E-01			<	7.15E-01			<	9.02E-01		
SR-89	<	5.06E+00			<	8.53E+00			<	6.09E+00		
SR-90	<	1.30E+00			<	1.53E+00			<	1.51E+00		
BE-7	<	5.93E+01			<	4.65E+01			<	4.43E+01		
K-40		1.21E+03	+/-	7.01E+01		1.37E+03	+/-	5.51E+01		1.36E+03	+/-	6.81E+01
MN-54	<	7.36E+00			<	5.93E+00			<	6.52E+00		
CO-58	<	6.93E+00			<	5.76E+00			<	6.69E+00		
FE-59	<	2.47E+01			<	1.69E+01			<	2.40E+01		
CO-60	<	7.18E+00			<	6.54E+00			<	7.54E+00		
ZN-65	<	2.02E+01			<	3.03E+01			<	1.50E+01		
ZR-95	<	1.18E+01			<	1.01E+01			<	1.12E+01		
RU-103	<	7.05E+00			<	5.62E+00			<	5.36E+00		
RU-106	<	6.55E+01			<	4.86E+01			<	6.02E+01		
CS-134	<	7.13E+00			<	5.70E+00			<	5.84E+00		
CS-137	<	8.06E+00			<	5.83E+00			<	6.21E+00		
BA-140	<	1.17E+01			<	9.06E+00			<	1.05E+01		
CE-141	<	8.93E+00			<	7.92E+00			<	7.29E+00		
CE-144	<	3.14E+01			<	2.94E+01			<	2.61E+01		
TH-228	<	2.81E+01			<	2.15E+01			<	2.42E+01		

Nuclide	26-JUL				9-AUG				23-AUG			
I-131	<	9.63E-01			<	7.78E-01			<	8.74E-01		
SR-89	<	4.95E+00			<	7.02E+00			<	7.99E+00		
SR-90		1.95E+00	+/-	4.13E-01		2.73E+00	+/-	5.52E-01	<	1.79E+00		
BE-7	<	4.60E+01			<	4.42E+01			<	4.25E+01		
K-40		1.28E+03	+/-	6.39E+01		1.41E+03	+/-	6.86E+01		1.45E+03	+/-	5.01E+01
MN-54	<	6.07E+00			<	5.89E+00			<	4.75E+00		
CO-58	<	5.67E+00			<	6.22E+00			<	5.21E+00		
FE-59	<	2.16E+01			<	2.24E+01			<	1.53E+01		
CO-60	<	7.86E+00			<	8.26E+00			<	5.07E+00		
ZN-65	<	1.39E+01			<	1.74E+01			<	2.86E+01		
ZR-95	<	9.25E+00			<	1.07E+01			<	7.12E+00		
RU-103	<	5.85E+00			<	5.62E+00			<	5.24E+00		
RU-106	<	5.23E+01			<	6.29E+01			<	4.05E+01		
CS-134	<	6.33E+00			<	6.17E+00			<	5.78E+00		
CS-137	<	6.14E+00			<	6.00E+00			<	5.43E+00		
BA-140	<	1.21E+01			<	1.03E+01			<	8.27E+00		
CE-141	<	7.45E+00			<	7.25E+00			<	6.31E+00		
CE-144	<	2.69E+01			<	2.82E+01			<	2.60E+01		
TH-228	<	2.62E+01			<	2.72E+01			<	1.67E+01		

FERMI 2
MILK ANALYSIS

M-8 (Control)
(pCi/liter)

Nuclide	20-SEP				27-SEP				11-OCT			
I-131	<	3.80E-01			<	8.75E-01			<	7.71E-01		
SR-89	<	6.21E+00			<	5.68E+00			<	8.43E+00		
SR-90	<	1.70E+00			<	1.89E+00			<	1.64E+00		
BE-7	<	3.62E+01			<	2.96E+01			<	4.63E+01		
K-40		1.48E+03	+/-	5.01E+01		1.46E+03	+/-	3.80E+01		1.43E+03	+/-	6.87E+01
MN-54	<	4.62E+00			<	3.59E+00			<	6.33E+00		
CO-58	<	4.32E+00			<	3.69E+00			<	5.59E+00		
FE-59	<	1.43E+01			<	1.08E+01			<	1.95E+01		
CO-60	<	5.12E+00			<	3.70E+00			<	8.46E+00		
ZN-65	<	1.49E+01			<	1.82E+01			<	1.75E+01		
ZR-95	<	7.81E+00			<	5.15E+00			<	1.13E+01		
RU-103	<	5.20E+00			<	3.80E+00			<	6.34E+00		
RU-106	<	4.27E+01			<	3.21E+01			<	5.79E+01		
CS-134	<	4.56E+00			<	3.88E+00			<	7.02E+00		
CS-137	<	4.92E+00			<	3.36E+00			<	7.60E+00		
BA-140	<	7.51E+00			<	6.34E+00			<	1.04E+01		
CE-141	<	6.39E+00			<	6.23E+00			<	7.86E+00		
CE-144	<	2.21E+01			<	1.90E+01			<	2.86E+01		
TH-228	<	1.54E+01			<	1.32E+01			<	2.44E+01		

Nuclide	18-OCT				29-NOV				20-DEC			
I-131	<	7.60E-01			<	7.18E-01			<	5.40E-01		
SR-89	<	6.00E+00			<	8.45E+00			<	8.04E+00		
SR-90	<	1.50E+00			<	1.59E+00				1.73E+00	+/-	5.49E-01
BE-7	<	3.74E+01			<	3.07E+01			<	5.87E+01		
K-40		1.53E+03	+/-	5.08E+01		1.46E+03	+/-	4.25E+01		1.41E+03	+/-	7.90E+01
MN-54	<	4.72E+00			<	3.92E+00			<	8.75E+00		
CO-58	<	4.63E+00			<	4.15E+00			<	7.48E+00		
FE-59	<	1.36E+01			<	1.35E+01			<	2.27E+01		
CO-60	<	5.14E+00			<	4.79E+00			<	1.03E+01		
ZN-65	<	2.21E+01			<	1.27E+01			<	2.70E+01		
ZR-95	<	7.39E+00			<	6.58E+00			<	1.29E+01		
RU-103	<	4.79E+00			<	4.31E+00			<	7.63E+00		
RU-106	<	4.16E+01			<	3.50E+01			<	5.77E+01		
CS-134	<	4.85E+00			<	4.08E+00			<	8.23E+00		
CS-137	<	4.14E+00			<	3.90E+00			<	7.66E+00		
BA-140	<	8.10E+00			<	7.98E+00			<	1.14E+01		
CE-141	<	6.67E+00			<	6.18E+00			<	9.78E+00		
CE-144	<	2.48E+01			<	2.04E+01			<	3.40E+01		
TH-228	<	1.58E+01			<	1.60E+01			<	2.90E+01		

FERMI 2
VEGETABLE ANALYSIS

FP-1 (Indicator)
(pCi/kg wet)

Nuclide	31-JUL Collards				31-JUL Cabbage				31-JUL Red Cabbage			
I-131	<	1.67E+01			<	2.65E+01			<	4.45E+01		
BE-7	<	3.21E+02			<	3.02E+02			<	2.70E+02		
K-40		3.51E+03	+/-	3.20E+02		2.37E+03	+/-	3.08E+02		2.59E+03	+/-	2.39E+02
MN-54	<	3.38E+01			<	2.82E+01			<	3.10E+01		
CO-58	<	3.61E+01			<	4.71E+01			<	3.14E+01		
FE-59	<	1.46E+02			<	1.16E+02			<	1.09E+02		
CO-60	<	3.82E+01			<	3.64E+01			<	2.85E+01		
ZN-65	<	1.11E+02			<	1.22E+02			<	8.43E+01		
ZR-95	<	5.84E+01			<	7.50E+01			<	5.46E+01		
RU-103	<	4.13E+01			<	5.04E+01			<	3.62E+01		
RU-106	<	3.62E+02			<	3.28E+02			<	2.80E+02		
CS-134	<	4.17E+01			<	4.86E+01			<	3.20E+01		
CS-137	<	4.56E+01			<	4.14E+01			<	3.20E+01		
BA-140	<	7.74E+01			<	8.42E+01			<	8.63E+01		
CE-141	<	5.28E+01			<	7.00E+01			<	6.02E+01		
CE-144	<	2.32E+02			<	1.91E+02			<	1.59E+02		
TH-228	<	1.27E+02			<	1.42E+02			<	1.16E+02		

FP-1 (Indicator)
(pCi/kg wet)

Nuclide	28-AUG Collards				28-AUG Swiss Chard				28-AUG Cabbage			
I-131	<	2.77E+01			<	4.11E+01			<	4.23E+01		
BE-7	<	3.84E+02			<	3.44E+02			<	3.04E+02		
K-40		3.00E+03	+/-	3.52E+02		3.64E+03	+/-	3.66E+02		2.13E+03	+/-	2.89E+02
MN-54	<	3.77E+01			<	3.87E+01			<	3.77E+01		
CO-58	<	4.86E+01			<	3.91E+01			<	4.58E+01		
FE-59	<	1.61E+02			<	1.45E+02			<	1.09E+02		
CO-60	<	6.50E+01			<	4.45E+01			<	3.85E+01		
ZN-65	<	1.53E+02			<	1.07E+02			<	1.24E+02		
ZR-95	<	6.85E+01			<	8.48E+01			<	6.35E+01		
RU-103	<	5.38E+01			<	4.06E+01			<	5.01E+01		
RU-106	<	4.20E+02			<	4.34E+02			<	3.44E+02		
CS-134	<	4.50E+01			<	3.92E+01			<	3.81E+01		
CS-137	<	5.21E+01			<	4.65E+01			<	4.95E+01		
BA-140	<	1.20E+02			<	9.19E+01			<	9.16E+01		
CE-141	<	6.20E+01			<	5.32E+01			<	5.53E+01		
CE-144	<	1.93E+02			<	1.61E+02			<	1.82E+02		
TH-228	<	3.37E+02			<	1.66E+02			<	1.51E+02		

FERMI 2
VEGETABLE ANALYSIS

FP-3 (Indicator)
(pCi/kg wet)

Nuclide	31-JUL Cabbage				31-JUL Collards				31-JUL Swiss Chard			
I-131	<	4.40E+01			<	4.68E+01			<	5.81E+01		
BE-7	<	4.38E+02			<	4.17E+02			<	2.55E+02		
K-40		1.57E+03	+/-	3.17E+02		2.26E+03	+/-	3.15E+02		3.41E+03	+/-	2.41E+02
MN-54	<	5.33E+01			<	5.18E+01			<	2.78E+01		
CO-58	<	6.20E+01			<	4.18E+01			<	2.86E+01		
FE-59	<	1.84E+02			<	1.27E+02			<	9.69E+01		
CO-60	<	5.72E+01			<	4.39E+01			<	2.87E+01		
ZN-65	<	1.38E+02			<	1.32E+02			<	6.02E+01		
ZR-95	<	7.75E+01			<	8.98E+01			<	4.54E+01		
RU-103	<	5.29E+01			<	5.21E+01			<	3.71E+01		
RU-106	<	4.33E+02			<	4.00E+02			<	2.34E+02		
CS-134	<	5.39E+01			<	5.60E+01			<	2.50E+01		
CS-137	<	5.11E+01			<	4.59E+01			<	2.87E+01		
BA-140	<	1.18E+02			<	1.03E+02			<	4.65E+01		
CE-141	<	7.26E+01			<	7.51E+01			<	4.41E+01		
CE-144	<	2.04E+02			<	2.27E+02			<	1.38E+02		
TH-228	<	1.99E+02			<	1.72E+02			<	2.34E+02		

FP-3 (Indicator)
(pCi/kg wet)

Nuclide	28-AUG Cabbage				28-AUG Swiss Chard				28-AUG Collards			
I-131	<	2.92E+01			<	5.01E+01			<	5.34E+01		
BE-7	<	2.45E+02			<	3.72E+02			<	3.89E+02		
K-40		1.76E+03	+/-	2.34E+02		4.15E+03	+/-	4.05E+02		3.70E+03	+/-	3.21E+02
MN-54	<	3.01E+01			<	3.96E+01			<	3.58E+01		
CO-58	<	3.40E+01			<	4.95E+01			<	4.18E+01		
FE-59	<	1.10E+02			<	1.53E+02			<	1.28E+02		
CO-60	<	3.70E+01			<	4.34E+01			<	4.54E+01		
ZN-65	<	8.66E+01			<	1.33E+02			<	1.23E+02		
ZR-95	<	5.50E+01			<	8.90E+01			<	8.26E+01		
RU-103	<	4.15E+01			<	5.74E+01			<	5.58E+01		
RU-106	<	3.42E+02			<	4.40E+02			<	3.40E+02		
CS-134	<	3.18E+01			<	5.19E+01			<	3.20E+01		
CS-137	<	3.80E+01			<	4.84E+01			<	4.22E+01		
BA-140	<	4.31E+01			<	1.16E+02			<	8.20E+01		
CE-141	<	5.15E+01			<	6.05E+01			<	5.85E+01		
CE-144	<	1.59E+02			<	1.84E+02			<	1.90E+02		
TH-228	<	1.37E+02			<	2.00E+02			<	3.69E+02		

FERMI 2
VEGETABLE ANALYSIS

FP-9 (Control)
(pCi/kg wet)

Nuclide	31-JUL Collards				31-JUL Cabbage			
I-131	<	2.93E+01			<	5.07E+01		
BE-7	<	3.47E+02			<	4.39E+02		
K-40		3.25E+03	+/-	4.59E+02		4.06E+03	+/-	4.09E+02
MN-54	<	5.60E+01			<	4.55E+01		
CO-58	<	7.03E+01			<	4.14E+01		
FE-59	<	1.75E+02			<	1.40E+02		
CO-60	<	7.90E+01			<	4.85E+01		
ZN-65	<	1.29E+02			<	1.19E+02		
ZR-95	<	9.36E+01			<	7.77E+01		
RU-103	<	5.86E+01			<	5.67E+01		
RU-106	<	4.26E+02			<	3.65E+02		
CS-134	<	5.04E+01			<	3.56E+01		
CS-137	<	5.96E+01			<	4.45E+01		
BA-140	<	1.29E+02			<	7.37E+01		
CE-141	<	8.11E+01			<	6.37E+01		
CE-144	<	2.41E+02			<	2.16E+02		
TH-228	<	1.85E+02			<	1.87E+02		

FP-9 (Control)
(pCi/kg wet)

Nuclide	28-AUG Cabbage				28-AUG Swiss Chard			
I-131	<	4.52E+01			<	4.27E+01		
BE-7	<	3.17E+02			<	4.23E+02		
K-40		3.45E+03	+/-	3.08E+02		5.95E+03	+/-	4.82E+02
MN-54	<	3.26E+01			<	5.23E+01		
CO-58	<	3.20E+01			<	4.78E+01		
FE-59	<	1.17E+02			<	1.75E+02		
CO-60	<	3.99E+01			<	5.30E+01		
ZN-65	<	9.38E+01			<	1.27E+02		
ZR-95	<	8.04E+01			<	8.74E+01		
RU-103	<	4.89E+01			<	5.76E+01		
RU-106	<	3.14E+02			<	4.54E+02		
CS-134	<	3.34E+01			<	6.01E+01		
CS-137	<	4.17E+01			<	5.62E+01		
BA-140	<	9.28E+01			<	1.33E+02		
CE-141	<	4.80E+01			<	6.22E+01		
CE-144	<	1.80E+02			<	2.10E+02		
TH-228	<	2.97E+02			<	2.03E+02		

FERMI 2
DRINKING WATER ANALYSIS

DW-1 (Indicator)
(pCi/liter)

Nuclide	17-JAN(a)	30-JAN	27-FEB
Gross Beta	3.24E+00 +/- 6.70E-01	4.79E+00 +/- 1.02E+00	< 3.25E+00
SR-89	< 6.89E+00	< 6.93E+00	< 7.33E+00
SR-90	< 1.67E+00	< 1.40E+00	< 1.53E+00
BE-7	< 2.83E+01	< 2.69E+01	< 3.57E+01
K-40	< 3.91E+01	< 6.49E+01	< 8.47E+01
MN-54	< 3.56E+00	< 3.50E+00	< 4.42E+00
CO-58	< 2.97E+00	< 3.62E+00	< 4.65E+00
FE-59	< 9.46E+00	< 1.09E+01	< 1.46E+01
CO-60	< 3.48E+00	< 3.52E+00	< 5.19E+00
ZN-65	< 2.26E+01	< 7.64E+00	< 1.03E+01
ZR-95	< 5.87E+00	< 6.47E+00	< 8.42E+00
RU-103	< 3.70E+00	< 4.45E+00	< 4.82E+00
RU-106	< 2.91E+01	< 3.17E+01	< 4.64E+01
CS-134	< 3.27E+00	< 3.08E+00	< 4.71E+00
CS-137	< 3.15E+00	< 3.57E+00	< 4.95E+00
BA-140	< 7.28E+00	< 4.62E+00	< 9.09E+00
CE-141	< 5.83E+00	< 5.27E+00	< 7.39E+00
CE-144	< 2.11E+01	< 1.70E+01	< 2.37E+01
TH-228	< 1.26E+01	< 3.45E+01	< 5.98E+01

Nuclide	27-MAR	24-APR	29-MAY
Gross Beta	3.46E+00 +/- 9.93E-01	< 3.24E+00	< 3.91E+00
SR-89	< 6.79E+00	< 4.24E+00	< 8.59E+00
SR-90	< 1.41E+00	< 1.03E+00	< 1.67E+00
BE-7	< 2.93E+01	< 4.62E+01	< 4.18E+01
K-40	< 5.76E+01	< 9.38E+01	< 8.22E+01
MN-54	< 3.78E+00	< 5.63E+00	< 4.52E+00
CO-58	< 3.84E+00	< 5.39E+00	< 4.84E+00
FE-59	< 1.04E+01	< 1.83E+01	< 1.35E+01
CO-60	< 4.25E+00	< 6.07E+00	< 5.33E+00
ZN-65	< 8.51E+00	< 2.99E+01	< 1.06E+01
ZR-95	< 6.47E+00	< 1.00E+01	< 9.12E+00
RU-103	< 3.43E+00	< 6.42E+00	< 5.07E+00
RU-106	< 3.92E+01	< 5.33E+01	< 4.91E+01
CS-134	< 3.56E+00	< 6.26E+00	< 4.50E+00
CS-137	< 3.98E+00	< 6.29E+00	< 4.81E+00
BA-140	< 5.97E+00	< 1.03E+01	< 1.23E+01
CE-141	< 5.10E+00	< 8.56E+00	< 8.61E+00
CE-144	< 1.99E+01	< 2.96E+01	< 2.37E+01
TH-228	< 1.62E+01	< 2.71E+01	< 2.13E+01

(a) Grab sample see Appendix D, Program Execution.

FERMI 2
DRINKING WATER ANALYSIS

DW-1 (Indicator)
(pCi/liter)

Nuclide	26-JUN				31-JUL				28-AUG			
Gross Beta	<	3.36E+00			<	2.96E+00				3.57E+00	+/-	1.03E+00
SR-89	<	7.03E+00			<	5.95E+00			<	8.91E+00		
SR-90	<	1.66E+00			<	1.58E+00			<	1.79E+00		
BE-7	<	3.07E+01			<	3.24E+01			<	3.30E+01		
K-40	<	6.06E+01			<	6.74E+01			<	6.91E+01		
MN-54	<	4.08E+00			<	3.73E+00			<	4.10E+00		
CO-58	<	4.21E+00			<	4.25E+00			<	4.00E+00		
FE-59	<	9.43E+00			<	1.02E+01			<	1.39E+01		
CO-60	<	3.66E+00			<	4.40E+00			<	5.18E+00		
ZN-65	<	1.01E+01			<	1.91E+01			<	1.17E+01		
ZR-95	<	6.35E+00			<	7.15E+00			<	6.74E+00		
RU-103	<	4.46E+00			<	4.63E+00			<	4.42E+00		
RU-106	<	3.73E+01			<	3.80E+01			<	3.59E+01		
CS-134	<	3.73E+00			<	4.14E+00			<	4.00E+00		
CS-137	<	4.55E+00			<	4.34E+00			<	4.38E+00		
BA-140	<	7.07E+00			<	6.38E+00			<	1.04E+01		
CE-141	<	5.70E+00			<	5.73E+00			<	5.97E+00		
CE-144	<	2.03E+01			<	2.13E+01			<	1.93E+01		
TH-228	<	1.70E+01			<	1.65E+01			<	1.56E+01		

Nuclide	25-SEP				30-OCT				27-NOV			
Gross Beta		3.86E+00	+/-	4.39E-01		9.75E+00	+/-	1.03E+00		4.93E+00	+/-	6.95E-01
SR-89	<	7.97E+00			<	6.47E+00			<	8.01E+00		
SR-90	<	1.68E+00			<	1.84E+00			<	1.71E+00		
BE-7	<	3.36E+01			<	3.25E+01			<	3.48E+01		
K-40	<	6.02E+01			<	6.56E+01			<	6.04E+01		
MN-54	<	4.01E+00			<	4.31E+00			<	4.01E+00		
CO-58	<	3.88E+00			<	3.85E+00			<	3.91E+00		
FE-59	<	1.20E+01			<	1.12E+01			<	1.29E+01		
CO-60	<	4.07E+00			<	4.21E+00			<	4.09E+00		
ZN-65	<	1.03E+01			<	1.06E+01			<	7.90E+00		
ZR-95	<	6.72E+00			<	6.17E+00			<	7.65E+00		
RU-103	<	4.58E+00			<	4.09E+00			<	4.10E+00		
RU-106	<	3.58E+01			<	3.82E+01			<	4.08E+01		
CS-134	<	4.09E+00			<	4.10E+00			<	3.81E+00		
CS-137	<	4.11E+00			<	4.22E+00			<	4.57E+00		
BA-140	<	7.86E+00			<	5.57E+00			<	8.88E+00		
CE-141	<	6.17E+00			<	5.37E+00			<	6.52E+00		
CE-144	<	2.22E+01			<	2.09E+01			<	2.17E+01		
TH-228	<	1.64E+01			<	1.76E+01			<	1.32E+01		

FERMI 2
DRINKING WATER ANALYSIS

DW-1 (Indicator)
(pCi/liter)

Nuclide	18-DEC			
Gross Beta		3.89E+00	+/-	6.57E-01
SR-89	<	7.51E+00		
SR-90	<	1.48E+00		
BE-7	<	3.19E+01		
K-40	<	6.25E+01		
MN-54	<	4.06E+00		
CO-58	<	3.67E+00		
FE-59	<	1.04E+01		
CO-60	<	4.06E+00		
ZN-65	<	9.53E+00		
ZR-95	<	6.04E+00		
RU-103	<	4.18E+00		
RU-106	<	3.93E+01		
CS-134	<	3.88E+00		
CS-137	<	4.35E+00		
BA-140	<	5.90E+00		
CE-141	<	5.70E+00		
CE-144	<	2.10E+01		
TH-228	<	1.62E+01		

FERMI 2
DRINKING WATER ANALYSIS

DW-2 (Control)
(pCi/liter)

Nuclide	30-JAN	27-FEB	27-MAR
Gross Beta	< 3.25E+00	< 3.07E+00	< 2.92E+00
SR-89	< 6.84E+00	< 7.01E+00	< 6.05E+00
SR-90	< 1.39E+00	< 1.48E+00	< 1.29E+00
BE-7	< 3.92E+01	< 4.34E+01	< 3.12E+01
K-40	< 7.73E+01	< 9.04E+01	< 6.08E+01
MN-54	< 4.55E+00	< 5.63E+00	< 3.50E+00
CO-58	< 4.63E+00	< 5.66E+00	< 4.05E+00
FE-59	< 1.51E+01	< 1.81E+01	< 1.08E+01
CO-60	< 4.68E+00	< 6.98E+00	< 4.26E+00
ZN-65	< 1.20E+01	< 1.22E+01	< 1.01E+01
ZR-95	< 8.07E+00	< 7.65E+00	< 5.91E+00
RU-103	< 4.74E+00	< 5.07E+00	< 3.76E+00
RU-106	< 4.16E+01	< 4.84E+01	< 3.62E+01
CS-134	< 5.02E+00	< 6.16E+00	< 4.26E+00
CS-137	< 5.65E+00	< 5.57E+00	< 3.27E+00
BA-140	< 8.01E+00	< 1.06E+01	< 6.78E+00
CE-141	< 6.96E+00	< 6.88E+00	< 5.50E+00
CE-144	< 2.42E+01	< 2.64E+01	< 2.20E+01
TH-228	< 1.60E+01	< 2.48E+01	< 1.42E+01

Nuclide	24-APR	29-MAY	26-JUN
Gross Beta	< 3.04E+00	< 3.85E+00	< 3.19E+00
SR-89	< 4.22E+00	< 5.38E+00	< 6.87E+00
SR-90	< 9.99E-01	< 1.46E+00	< 1.59E+00
BE-7	< 5.15E+01	< 4.34E+01	< 3.29E+01
K-40	< 9.48E+01	< 8.14E+01	< 5.74E+01
MN-54	< 5.76E+00	< 5.81E+00	< 4.46E+00
CO-58	< 6.90E+00	< 5.96E+00	< 4.52E+00
FE-59	< 2.10E+01	< 1.72E+01	< 1.06E+01
CO-60	< 6.62E+00	< 6.05E+00	< 4.35E+00
ZN-65	< 1.80E+01	< 1.33E+01	< 1.92E+01
ZR-95	< 9.99E+00	< 9.21E+00	< 6.59E+00
RU-103	< 6.19E+00	< 6.29E+00	< 3.87E+00
RU-106	< 5.74E+01	< 5.20E+01	< 3.44E+01
CS-134	< 5.84E+00	< 5.57E+00	< 3.80E+00
CS-137	< 6.09E+00	< 5.83E+00	< 4.54E+00
BA-140	< 1.28E+01	< 1.47E+01	< 6.29E+00
CE-141	< 8.02E+00	< 7.78E+00	< 6.34E+00
CE-144	< 2.83E+01	< 2.52E+01	< 2.18E+01
TH-228	< 2.50E+01	< 2.11E+01	< 1.57E+01

FERMI 2
DRINKING WATER ANALYSIS

DW-2 (Control)
(pCi/liter)

Nuclide	31-JUL				28-AUG				25-SEP			
Gross Beta	<	2.92E+00			<	3.33E+00				2.71E+00	+/-	3.92E-01
SR-89	<	6.19E+00			<	7.57E+00			<	6.67E+00		
SR-90	<	1.63E+00			<	1.41E+00			<	1.83E+00		
BE-7	<	3.89E+01			<	3.48E+01			<	3.13E+01		
K-40	<	7.92E+01			<	5.81E+01			<	6.27E+01		
MN-54	<	4.88E+00			<	3.91E+00			<	3.94E+00		
CO-58	<	3.94E+00			<	3.95E+00			<	3.49E+00		
FE-59	<	1.51E+01			<	1.24E+01			<	9.73E+00		
CO-60	<	5.42E+00			<	4.55E+00			<	4.61E+00		
ZN-65	<	2.66E+01			<	1.17E+01			<	2.11E+01		
ZR-95	<	8.18E+00			<	6.88E+00			<	6.75E+00		
RU-103	<	5.64E+00			<	4.42E+00			<	4.13E+00		
RU-106	<	5.29E+01			<	3.81E+01			<	3.75E+01		
CS-134	<	4.72E+00			<	4.00E+00			<	3.80E+00		
CS-137	<	4.95E+00			<	4.21E+00			<	3.97E+00		
BA-140	<	8.18E+00			<	8.02E+00			<	5.99E+00		
CE-141	<	7.06E+00			<	6.18E+00			<	5.07E+00		
CE-144	<	2.46E+01			<	2.17E+01			<	1.91E+01		
TH-228	<	1.71E+01			<	1.75E+01			<	3.94E+01		

Nuclide	30-OCT				27-NOV				18-DEC			
Gross Beta		3.74E+00	+/-	6.10E-01		2.62E+00	+/-	6.13E-01		2.82E+00	+/-	5.80E-01
SR-89	<	9.23E+00			<	8.10E+00			<	6.99E+00		
SR-90	<	1.79E+00			<	1.72E+00			<	1.39E+00		
BE-7	<	3.15E+01			<	3.62E+01			<	3.35E+01		
K-40	<	4.37E+01			<	5.99E+01			<	5.69E+01		
MN-54	<	4.13E+00			<	4.17E+00			<	6.16E+00		
CO-58	<	4.18E+00			<	4.61E+00			<	3.96E+00		
FE-59	<	9.66E+00			<	1.34E+01			<	1.05E+01		
CO-60	<	4.06E+00			<	4.26E+00			<	3.88E+00		
ZN-65	<	1.11E+01			<	1.48E+01			<	2.04E+01		
ZR-95	<	6.51E+00			<	6.95E+00			<	6.42E+00		
RU-103	<	5.43E+00			<	4.53E+00			<	4.32E+00		
RU-106	<	3.65E+01			<	4.09E+01			<	3.60E+01		
CS-134	<	3.67E+00			<	4.56E+00			<	4.39E+00		
CS-137	<	3.92E+00			<	4.07E+00			<	4.82E+00		
BA-140	<	6.32E+00			<	8.47E+00			<	6.01E+00		
CE-141	<	5.56E+00			<	5.92E+00			<	6.49E+00		
CE-144	<	2.25E+01			<	2.29E+01			<	2.33E+01		
TH-228	<	1.59E+01			<	1.35E+01			<	1.81E+01		

FERMI 2
SURFACE WATER ANALYSIS

SW-2 (Control)
(pCi/liter)

Nuclide	30-JAN			27-FEB			27-MAR		
SR-89	<	6.74E+00		<	6.54E+00		<	5.51E+00	
SR-90	<	1.39E+00		<	1.43E+00		<	1.47E+00	
BE-7	<	4.01E+01		<	3.10E+01		<	3.52E+01	
K-40	<	9.13E+01		<	5.87E+01		<	7.14E+01	
MN-54	<	5.80E+00		<	4.14E+00		<	4.16E+00	
CO-58	<	4.82E+00		<	4.23E+00		<	4.66E+00	
FE-59	<	1.56E+01		<	1.08E+01		<	1.29E+01	
CO-60	<	6.58E+00		<	3.98E+00		<	5.15E+00	
ZN-65	<	1.42E+01		<	1.14E+01		<	1.38E+01	
ZR-95	<	9.32E+00		<	6.09E+00		<	7.82E+00	
RU-103	<	5.41E+00		<	4.08E+00		<	4.98E+00	
RU-106	<	4.82E+01		<	4.03E+01		<	4.28E+01	
CS-134	<	6.19E+00		<	3.95E+00		<	4.92E+00	
CS-137	<	5.57E+00		<	4.18E+00		<	4.91E+00	
BA-140	<	1.04E+01		<	6.36E+00		<	7.67E+00	
CE-141	<	1.12E+01		<	8.19E+00		<	6.97E+00	
CE-144	<	2.60E+01		<	2.15E+01		<	2.25E+01	
TH-228	<	2.38E+01		<	1.57E+01		<	1.55E+01	

Nuclide	24-APR			29-MAY			26-JUN		
SR-89	<	3.71E+00		<	6.00E+00		<	4.64E+00	
SR-90	<	1.31E+00		<	1.41E+00		<	1.03E+00	
BE-7	<	4.70E+01		<	4.83E+01		<	4.02E+01	
K-40	<	9.44E+01		<	1.04E+02		<	8.23E+01	
MN-54	<	4.55E+00		<	6.69E+00		<	4.82E+00	
CO-58	<	5.70E+00		<	6.83E+00		<	4.59E+00	
FE-59	<	1.65E+01		<	2.11E+01		<	1.83E+01	
CO-60	<	7.16E+00		<	8.76E+00		<	5.75E+00	
ZN-65	<	1.26E+01		<	1.47E+01		<	1.31E+01	
ZR-95	<	9.30E+00		<	1.15E+01		<	9.02E+00	
RU-103	<	5.79E+00		<	6.84E+00		<	5.54E+00	
RU-106	<	5.00E+01		<	6.23E+01		<	4.40E+01	
CS-134	<	5.75E+00		<	7.04E+00		<	5.17E+00	
CS-137	<	5.97E+00		<	7.78E+00		<	6.07E+00	
BA-140	<	1.10E+01		<	1.34E+01		<	9.46E+00	
CE-141	<	8.30E+00		<	8.87E+00		<	7.52E+00	
CE-144	<	2.68E+01		<	2.79E+01		<	2.67E+01	
TH-228	<	2.42E+01		<	2.27E+01		<	2.34E+01	

FERMI 2
SURFACE WATER ANALYSIS

SW-2 (Control)
(pCi/liter)

Nuclide	31-JUL			28-AUG			25-SEP		
SR-89	<	6.38E+00		<	7.05E+00		<	6.52E+00	
SR-90	<	1.20E+00		<	1.32E+00		<	1.76E+00	
BE-7	<	4.35E+01		<	2.84E+01		<	4.48E+01	
K-40	<	8.68E+01		<	5.14E+01		<	8.08E+01	
MN-54	<	4.73E+00		<	3.35E+00		<	4.50E+00	
CO-58	<	5.06E+00		<	3.08E+00		<	4.69E+00	
FE-59	<	1.70E+01		<	1.01E+01		<	1.30E+01	
CO-60	<	4.98E+00		<	3.24E+00		<	5.75E+00	
ZN-65	<	2.46E+01		<	8.39E+00		<	1.16E+01	
ZR-95	<	8.25E+00		<	5.70E+00		<	7.90E+00	
RU-103	<	5.25E+00		<	3.61E+00		<	5.64E+00	
RU-106	<	4.24E+01		<	3.05E+01		<	4.27E+01	
CS-134	<	5.00E+00		<	3.49E+00		<	4.63E+00	
CS-137	<	5.53E+00		<	3.21E+00		<	5.00E+00	
BA-140	<	7.60E+00		<	6.83E+00		<	7.51E+00	
CE-141	<	7.56E+00		<	5.43E+00		<	7.63E+00	
CE-144	<	2.61E+01		<	1.77E+01		<	2.39E+01	
TH-228	<	2.17E+01		<	1.38E+01		<	2.09E+01	

Nuclide	30-OCT			27-NOV			18-DEC		
SR-89	<	7.15E+00		<	7.59E+00		<	7.06E+00	
SR-90	<	1.37E+00		<	1.62E+00		<	1.41E+00	
BE-7	<	4.24E+01		<	5.06E+01		<	4.37E+01	
K-40	<	7.44E+01		<	8.42E+01		<	7.92E+01	
MN-54	<	4.07E+00		<	5.52E+00		<	5.64E+00	
CO-58	<	4.52E+00		<	5.93E+00		<	5.23E+00	
FE-59	<	1.39E+01		<	1.66E+01		<	1.55E+01	
CO-60	<	5.53E+00		<	5.82E+00		<	5.10E+00	
ZN-65	<	1.48E+01		<	1.84E+01		<	1.28E+01	
ZR-95	<	8.52E+00		<	8.71E+00		<	9.50E+00	
RU-103	<	4.45E+00		<	6.08E+00		<	5.87E+00	
RU-106	<	4.28E+01		<	5.13E+01		<	4.76E+01	
CS-134	<	5.09E+00		<	5.94E+00		<	4.93E+00	
CS-137	<	4.60E+00		<	5.04E+00		<	5.58E+00	
BA-140	<	6.61E+00		<	1.05E+01		<	9.48E+00	
CE-141	<	7.08E+00		<	9.62E+00		<	7.20E+00	
CE-144	<	2.36E+01		<	3.07E+01		<	3.16E+01	
TH-228	<	1.94E+01		<	2.04E+01		<	2.06E+01	

FERMI 2
SURFACE WATER ANALYSIS

SW-3 (Indicator)
(pCi/liter)

Nuclide	30-JAN			27-FEB			27-MAR		
SR-89	<	7.06E+00		<	7.28E+00		<	5.97E+00	
SR-90	<	1.40E+00		<	1.48E+00		<	1.60E+00	
BE-7	<	2.91E+01		<	3.14E+01		<	4.49E+01	
K-40	<	5.73E+01		<	6.47E+01		<	8.28E+01	
MN-54	<	4.11E+00		<	3.85E+00		<	5.57E+00	
CO-58	<	3.37E+00		<	4.04E+00		<	4.84E+00	
FE-59	<	1.16E+01		<	9.58E+00		<	1.38E+01	
CO-60	<	4.41E+00		<	3.95E+00		<	5.80E+00	
ZN-65	<	1.05E+01		<	1.88E+01		<	1.43E+01	
ZR-95	<	6.17E+00		<	6.64E+00		<	1.06E+01	
RU-103	<	3.81E+00		<	5.03E+00		<	5.45E+00	
RU-106	<	3.52E+01		<	3.92E+01		<	4.53E+01	
CS-134	<	3.92E+00		<	4.27E+00		<	5.36E+00	
CS-137	<	4.09E+00		<	4.73E+00		<	5.72E+00	
BA-140	<	5.00E+00		<	5.29E+00		<	1.09E+01	
CE-141	<	5.41E+00		<	4.28E+00		<	6.78E+00	
CE-144	<	2.01E+01		<	1.99E+01		<	2.51E+01	
TH-228	<	1.58E+01		<	3.79E+01		<	2.30E+01	

Nuclide	24-APR			29-MAY			26-JUN		
SR-89	<	2.80E+00		<	6.24E+00		<	7.46E+00	
SR-90	<	9.69E-01		<	1.43E+00		<	1.68E+00	
BE-7	<	3.85E+01		<	3.83E+01		<	4.90E+01	
K-40	<	9.63E+01		<	3.00E+01		<	8.65E+01	
MN-54	<	6.33E+00		<	4.99E+00		<	6.69E+00	
CO-58	<	6.55E+00		<	5.04E+00		<	6.18E+00	
FE-59	<	1.55E+01		<	1.27E+01		<	1.90E+01	
CO-60	<	7.89E+00		<	4.09E+00		<	5.22E+00	
ZN-65	<	1.54E+01		<	1.21E+01		<	1.48E+01	
ZR-95	<	1.05E+01		<	7.40E+00		<	1.02E+01	
RU-103	<	6.68E+00		<	4.76E+00		<	5.32E+00	
RU-106	<	5.11E+01		<	4.16E+01		<	4.90E+01	
CS-134	<	7.58E+00		<	4.94E+00		<	5.55E+00	
CS-137	<	7.01E+00		<	5.14E+00		<	5.86E+00	
BA-140	<	1.37E+01		<	1.02E+01		<	1.06E+01	
CE-141	<	7.60E+00		<	7.40E+00		<	7.61E+00	
CE-144	<	3.09E+01		<	2.71E+01		<	2.61E+01	
TH-228	<	2.23E+01		<	1.84E+01		<	2.29E+01	

FERMI 2
SURFACE WATER ANALYSIS

SW-3 (Indicator)
(pCi/liter)

Nuclide	25-JUL	28-AUG	25-SEP
SR-89	< 7.75E+00	< 8.26E+00	< 7.72E+00
SR-90	< 1.77E+00	< 1.50E+00	< 1.65E+00
BE-7	< 3.97E+01	< 3.30E+01	< 4.65E+01
K-40	< 8.73E+01	< 6.20E+01	< 7.80E+01
MN-54	< 5.00E+00	< 3.75E+00	< 5.94E+00
CO-58	< 5.16E+00	< 3.77E+00	< 5.20E+00
FE-59	< 1.76E+01	< 1.13E+01	< 2.01E+01
CO-60	< 6.74E+00	< 5.04E+00	< 5.48E+00
ZN-65	< 2.86E+01	< 1.05E+01	< 1.15E+01
ZR-95	< 9.19E+00	< 6.28E+00	< 8.65E+00
RU-103	< 5.39E+00	< 4.38E+00	< 6.28E+00
RU-106	< 4.58E+01	< 3.97E+01	< 5.48E+01
CS-134	< 6.10E+00	< 4.05E+00	< 4.82E+00
CS-137	< 5.70E+00	< 4.11E+00	< 5.78E+00
BA-140	< 1.04E+01	< 7.12E+00	< 1.19E+01
CE-141	< 7.20E+00	< 5.91E+00	< 7.25E+00
CE-144	< 2.61E+01	< 2.11E+01	< 2.43E+01
TH-228	< 2.37E+01	< 1.54E+01	< 2.17E+01

Nuclide	30-OCT	6-NOV(a)	27-NOV
SR-89	< 8.00E+00	< 6.57E+00	< 7.29E+00
SR-90	< 1.56E+00	< 2.02E+00	< 1.55E+00
BE-7	< 4.17E+01	< 3.32E+01	< 4.67E+01
K-40	< 9.62E+01	< 6.50E+01	< 8.85E+01
MN-54	< 5.08E+00	< 3.65E+00	< 5.77E+00
CO-58	< 6.04E+00	< 3.68E+00	< 6.00E+00
FE-59	< 1.55E+01	< 1.14E+01	< 1.97E+01
CO-60	< 4.25E+00	< 4.21E+00	< 5.71E+00
ZN-65	< 2.96E+01	< 1.92E+01	< 1.22E+01
ZR-95	< 8.37E+00	< 6.61E+00	< 9.55E+00
RU-103	< 5.55E+00	< 4.60E+00	< 6.57E+00
RU-106	< 5.21E+01	< 3.41E+01	< 5.00E+01
CS-134	< 6.01E+00	< 3.51E+00	< 6.17E+00
CS-137	< 5.92E+00	< 4.29E+00	< 5.71E+00
BA-140	< 1.17E+01	< 6.29E+00	< 1.39E+01
CE-141	< 6.42E+00	< 5.46E+00	< 8.40E+00
CE-144	< 2.67E+01	< 2.01E+01	< 2.72E+01
TH-228	< 2.22E+01	< 1.68E+01	< 2.37E+01

(a) Grab sample see Appendix D, Program Execution.

FERMI 2
SURFACE WATER ANALYSIS

SW-3 (Indicator)
(pCi/liter)

Nuclide	18-DEC	
SR-89	<	8.24E+00
SR-90	<	1.65E+00
BE-7	<	4.04E+01
K-40	<	6.62E+01
MN-54	<	5.48E+00
CO-58	<	5.09E+00
FE-59	<	1.86E+01
CO-60	<	7.71E+00
ZN-65	<	1.32E+01
ZR-95	<	7.55E+00
RU-103	<	5.45E+00
RU-106	<	4.93E+01
CS-134	<	5.41E+00
CS-137	<	5.99E+00
BA-140	<	9.56E+00
CE-141	<	6.91E+00
CE-144	<	2.62E+01
TH-228	<	2.50E+01

FERMI 2
DRINKING AND SURFACE WATER QUARTERLY COMPOSITE SAMPLES

Tritium
(pCi/liter)

Station	First Quarter (a)	Second Quarter
DW-1		< 1.17E+03
DW-2		< 1.16E+03
SW-2		< 1.16E+03
SW-3		< 1.16E+03

Station	Third Quarter	Fourth Quarter
DW-1	< 1.15E+03	< 1.27E+03
DW-2	< 1.15E+03	< 1.29E+03
SW-2	< 1.15E+03	< 1.28E+02
SW-3	< 1.15E+03	< 1.28E+03 (a)

(a) See Appendix D - Program Execution.

FERMI 2
GROUNDWATER ANALYSIS

GW-1 (Indicator)
(pCi/liter)

Nuclide	First Quarter			Second Quarter		
BE-7	<	3.97E+01		<	4.84E+01	
K-40	<	7.13E+01		<	6.39E+01	
MN-54	<	3.85E+00		<	5.25E+00	
CO-58	<	4.53E+00		<	5.66E+00	
FE-59	<	1.32E+01		<	2.33E+01	
CO-60	<	4.88E+00		<	7.68E+00	
ZN-65	<	1.26E+01		<	1.74E+01	
ZR-95	<	7.13E+00		<	9.01E+00	
RU-103	<	3.52E+00		<	6.99E+00	
RU-106	<	3.34E+01		<	5.05E+01	
CS-134	<	4.16E+00		<	5.04E+00	
CS-137	<	4.23E+00		<	6.29E+00	
BA-140	<	6.84E+00		<	1.04E+01	
CE-141	<	7.78E+00		<	8.79E+00	
CE-144	<	2.58E+01		<	3.11E+01	
TH-228	<	1.79E+01		<	2.24E+01	
H-3	<	1.20E+03		<	9.61E+02	

Nuclide	Third Quarter			Fourth Quarter		
BE-7	<	2.87E+01		<	4.49E+01	
K-40	<	6.73E+01		<	6.39E+01	
MN-54	<	3.90E+00		<	4.98E+00	
CO-58	<	4.34E+00		<	5.10E+00	
FE-59	<	1.47E+01		<	1.48E+01	
CO-60	<	4.93E+00		<	5.94E+00	
ZN-65	<	1.08E+01		<	1.09E+01	
ZR-95	<	8.12E+00		<	7.51E+00	
RU-103	<	4.72E+00		<	5.17E+00	
RU-106	<	4.45E+01		<	4.23E+01	
CS-134	<	4.54E+00		<	4.83E+00	
CS-137	<	4.40E+00		<	4.14E+00	
BA-140	<	6.51E+00		<	9.09E+00	
CE-141	<	7.32E+00		<	8.56E+00	
CE-144	<	2.81E+01		<	3.19E+01	
TH-228	<	5.56E+01		<	1.90E+01	
H-3	<	9.38E+02		<	1.12E+03	

FERMI 2
GROUNDWATER ANALYSIS

GW-2 (Indicator)
(pCi/liter)

Nuclide	First Quarter			Second Quarter		
BE-7	<	4.39E+01		<	3.37E+01	
K-40	<	7.78E+01		<	5.09E+01	
MN-54	<	6.04E+00		<	3.35E+00	
CO-58	<	4.14E+00		<	3.60E+00	
FE-59	<	1.87E+01		<	1.07E+01	
CO-60	<	5.21E+00		<	4.06E+00	
ZN-65	<	1.37E+01		<	1.85E+01	
ZR-95	<	9.05E+00		<	6.01E+00	
RU-103	<	5.83E+00		<	4.43E+00	
RU-106	<	4.99E+01		<	3.29E+01	
CS-134	<	7.03E+00		<	3.98E+00	
CS-137	<	6.09E+00		<	4.03E+00	
BA-140	<	8.89E+00		<	7.82E+00	
CE-141	<	7.60E+00		<	6.65E+00	
CE-144	<	2.68E+01		<	2.53E+01	
TH-228	<	2.20E+01		<	1.24E+01	
H-3	<	1.21E+03		<	9.63E+02	

Nuclide	Third Quarter			Fourth Quarter		
BE-7	<	3.86E+01		<	4.41E+01	
K-40	<	6.54E+01		<	7.02E+01	
MN-54	<	4.08E+00		<	4.45E+00	
CO-58	<	4.01E+00		<	5.36E+00	
FE-59	<	1.85E+01		<	1.43E+01	
CO-60	<	5.20E+00		<	6.63E+00	
ZN-65	<	1.30E+01		<	1.07E+01	
ZR-95	<	9.94E+00		<	9.41E+00	
RU-103	<	5.39E+00		<	5.54E+00	
RU-106	<	3.96E+01		<	4.41E+01	
CS-134	<	4.58E+00		<	6.00E+00	
CS-137	<	5.44E+00		<	5.92E+00	
BA-140	<	1.05E+01		<	7.87E+00	
CE-141	<	8.49E+00		<	7.72E+00	
CE-144	<	3.01E+01		<	2.95E+01	
TH-228	<	1.96E+01		<	1.63E+01	
H-3	<	9.39E+02		<	1.12E+03	

FERMI 2
GROUNDWATER ANALYSIS

GW-3 (Indicator)
(pCi/liter)

Nuclide	First Quarter			Second Quarter		
BE-7	<	4.85E+01		<	3.35E+01	
K-40	<	7.38E+01		<	4.60E+01	
MN-54	<	5.09E+00		<	3.89E+00	
CO-58	<	5.05E+00		<	4.32E+00	
FE-59	<	1.84E+01		<	1.12E+01	
CO-60	<	6.55E+00		<	3.39E+00	
ZN-65	<	1.49E+01		<	1.80E+01	
ZR-95	<	8.67E+00		<	6.45E+00	
RU-103	<	5.54E+00		<	4.13E+00	
RU-106	<	4.78E+01		<	3.70E+01	
CS-134	<	6.45E+00		<	3.93E+00	
CS-137	<	6.29E+00		<	3.61E+00	
BA-140	<	9.86E+00		<	5.95E+00	
CE-141	<	8.38E+00		<	5.31E+00	
CE-144	<	2.83E+01		<	2.51E+01	
TH-228	<	2.24E+01		<	1.25E+01	
H-3	<	1.21E+03		<	9.62E+02	

Nuclide	Third Quarter			Fourth Quarter		
BE-7	<	4.22E+01		<	4.72E+01	
K-40	<	6.11E+01		<	6.65E+01	
MN-54	<	4.22E+00		<	5.23E+00	
CO-58	<	5.40E+00		<	5.29E+00	
FE-59	<	1.35E+01		<	1.31E+01	
CO-60	<	6.24E+00		<	5.53E+00	
ZN-65	<	9.57E+00		<	1.55E+01	
ZR-95	<	1.04E+01		<	9.29E+00	
RU-103	<	5.56E+00		<	5.46E+00	
RU-106	<	4.06E+01		<	5.83E+01	
CS-134	<	5.04E+00		<	5.03E+00	
CS-137	<	4.64E+00		<	5.20E+00	
BA-140	<	9.35E+00		<	8.91E+00	
CE-141	<	8.78E+00		<	8.34E+00	
CE-144	<	2.85E+01		<	3.22E+01	
TH-228	<	2.44E+01		<	2.29E+01	
H-3	<	9.44E+02		<	1.12E+03	

FERMI 2
GROUNDWATER ANALYSIS

GW-4 (Control)
(pCi/liter)

Nuclide	First Quarter		Second Quarter	
BE-7	<	3.58E+01	<	3.44E+01
K-40	<	5.01E+01	<	4.85E+01
MN-54	<	3.62E+00	<	3.95E+00
CO-58	<	3.63E+00	<	4.11E+00
FE-59	<	1.05E+01	<	1.06E+01
CO-60	<	4.45E+00	<	4.12E+00
ZN-65	<	7.71E+00	<	1.98E+01
ZR-95	<	6.27E+00	<	5.88E+00
RU-103	<	4.35E+00	<	4.21E+00
RU-106	<	2.79E+01	<	3.99E+01
CS-134	<	3.03E+00	<	3.74E+00
CS-137	<	4.31E+00	<	4.04E+00
BA-140	<	7.21E+00	<	7.26E+00
CE-141	<	6.95E+00	<	7.34E+00
CE-144	<	2.46E+01	<	2.64E+01
TH-228	<	1.25E+01	<	1.70E+01
H-3	<	1.21E+03	<	9.56E+02

Nuclide	Third Quarter		Fourth Quarter	
BE-7	<	2.98E+01	<	2.93E+01
K-40	<	4.43E+01	<	4.86E+01
MN-54	<	3.63E+00	<	3.63E+00
CO-58	<	3.02E+00	<	3.99E+00
FE-59	<	1.01E+01	<	9.48E+00
CO-60	<	4.88E+00	<	4.17E+00
ZN-65	<	1.05E+01	<	1.80E+01
ZR-95	<	5.08E+00	<	6.42E+00
RU-103	<	4.13E+00	<	3.76E+00
RU-106	<	3.54E+01	<	3.53E+01
CS-134	<	3.42E+00	<	3.70E+00
CS-137	<	3.79E+00	<	3.53E+00
BA-140	<	6.56E+00	<	4.69E+00
CE-141	<	6.72E+00	<	5.15E+00
CE-144	<	2.54E+01	<	2.51E+01
TH-228	<	1.53E+01	<	1.54E+01
H-3	<	9.39E+02	<	1.12E+03

FERMI 2
SEDIMENT ANALYSIS

S-1 (Indicator)
(pCi/kg dry)

Nuclide	3-MAY				2-OCT			
SR-89	<	1.67E+03			<	2.86E+02		
SR-90		4.12E+02	+/-	7.26E+01		2.64E+02	+/-	7.69E+01
BE-7	<	2.55E+02			<	1.71E+02		
K-40		8.16E+03	+/-	3.12E+02		1.14E+04	+/-	3.71E+02
MN-54	<	1.89E+01			<	1.95E+01		
CO-58	<	3.13E+01			<	2.79E+01		
FE-59	<	1.20E+02			<	7.98E+01		
CO-60	<	2.34E+01			<	2.65E+01		
ZN-65	<	1.04E+02			<	1.18E+02		
ZR-95	<	4.54E+01			<	3.18E+01		
RU-103	<	3.55E+01			<	2.54E+01		
RU-106	<	1.86E+02			<	1.99E+02		
CS-134	<	7.67E+01			<	1.97E+01		
CS-137	<	1.91E+01			<	2.19E+01		
BA-140	<	7.55E+02			<	1.39E+02		
CE-141	<	6.27E+01			<	4.13E+01		
CE-144	<	1.26E+02			<	1.33E+02		
TH-228		1.12E+02	+/-	2.50E+01		9.99E+01	+/-	2.54E+01

S-2 (Indicator)
(pCi/kg dry)

Nuclide	3-MAY				3-OCT			
SR-89	<	1.69E+03			<	2.40E+02		
SR-90	<	2.32E+02			<	2.00E+02		
BE-7	<	5.54E+02			<	3.31E+02		
K-40		1.03E+04	+/-	6.76E+02		1.37E+04	+/-	4.49E+02
MN-54	<	5.71E+01			<	2.88E+01		
CO-58	<	6.85E+01			<	3.39E+01		
FE-59	<	4.14E+02			<	1.17E+02		
CO-60	<	7.19E+01			<	3.97E+01		
ZN-65	<	1.59E+02			<	8.17E+01		
ZR-95	<	1.29E+02			<	4.80E+01		
RU-103	<	8.60E+01			<	3.45E+01		
RU-106	<	4.40E+02			<	2.82E+02		
CS-134	<	5.26E+01			<	1.29E+02		
CS-137	<	6.16E+01			<	3.81E+01		
BA-140	<	1.47E+03			<	2.05E+02		
CE-141	<	1.18E+02			<	5.76E+01		
CE-144	<	2.35E+02			<	2.01E+02		
TH-228	<	2.38E+02				4.38E+02	+/-	4.26E+01

FERMI 2
SEDIMENT ANALYSIS

S-3 (Indicator)
(pCi/kg dry)

Nuclide	3-MAY				2-OCT			
SR-89	<	9.78E+02			<	2.29E+02		
SR-90	<	1.81E+02			<	2.03E+02		
BE-7	<	1.63E+02			<	1.91E+02		
K-40		9.29E+03	+/-	2.26E+02		1.30E+04	+/-	3.85E+02
MN-54	<	1.52E+01			<	2.55E+01		
CO-58	<	2.03E+01			<	2.54E+01		
FE-59	<	8.88E+01			<	8.46E+01		
CO-60	<	1.65E+01			<	2.65E+01		
ZN-65	<	7.93E+01			<	6.97E+01		
ZR-95	<	3.59E+01			<	3.95E+01		
RU-103	<	2.53E+01			<	2.13E+01		
RU-106	<	1.47E+02			<	2.02E+02		
CS-134	<	1.19E+01			<	2.35E+01		
CS-137	<	1.56E+01			<	2.33E+01		
BA-140	<	4.37E+02			<	1.91E+02		
CE-141	<	5.20E+01			<	4.27E+01		
CE-144	<	1.09E+02			<	1.36E+02		
TH-228		1.90E+02	+/-	1.75E+01		1.73E+02	+/-	2.83E+01

S-4 (Indicator)
(pCi/kg dry)

Nuclide	2-MAY				20-SEP			
SR-89	<	1.14E+03			<	3.30E+02		
SR-90		2.29E+02	+/-	6.77E+01	<	2.30E+02		
BE-7	<	3.13E+02			<	2.43E+02		
K-40		9.86E+03	+/-	3.51E+02		9.42E+03	+/-	3.23E+02
MN-54	<	2.72E+01			<	2.44E+01		
CO-58	<	3.63E+01			<	2.66E+01		
FE-59	<	1.22E+02			<	1.03E+02		
CO-60	<	2.66E+01			<	2.67E+01		
ZN-65	<	1.34E+02			<	1.10E+02		
ZR-95	<	6.03E+01			<	4.80E+01		
RU-103	<	4.32E+01			<	2.83E+01		
RU-106	<	1.85E+02			<	1.97E+02		
CS-134	<	1.07E+02			<	2.37E+01		
CS-137	<	2.48E+01			<	2.37E+01		
BA-140	<	9.01E+02			<	3.41E+02		
CE-141	<	8.23E+01			<	5.68E+01		
CE-144	<	1.63E+02			<	1.53E+02		
TH-228		2.06E+02	+/-	2.69E+01		1.88E+02	+/-	3.02E+01

FERMI 2
SEDIMENT ANALYSIS

S-5 (Control)
(pCi/kg dry)

Nuclide	4-MAY				3-OCT			
SR-89	<	1.66E+03			<	3.19E+02		
SR-90	<	2.13E+02			<	2.58E+02		
BE-7	<	7.23E+02			<	4.86E+02		
K-40		1.42E+04	+/-	8.67E+02		9.54E+03	+/-	6.16E+02
MN-54	<	8.38E+01			<	5.13E+01		
CO-58	<	9.01E+01			<	7.06E+01		
FE-59	<	4.84E+02			<	1.69E+02		
CO-60	<	9.67E+01			<	7.00E+01		
ZN-65	<	1.44E+02			<	2.12E+02		
ZR-95	<	1.68E+02			<	1.02E+02		
RU-103	<	9.13E+01			<	5.43E+01		
RU-106	<	6.27E+02			<	5.61E+02		
CS-134	<	6.26E+01			<	8.02E+01		
CS-137	<	8.48E+01			<	6.60E+01		
BA-140	<	1.67E+03			<	3.53E+02		
CE-141	<	1.68E+02			<	9.39E+01		
CE-144	<	3.51E+02			<	2.73E+02		
TH-228		4.16E+02	+/-	8.59E+01		4.13E+02	+/-	7.31E+01

FERMI 2
FISH ANALYSIS

F-1 (Control)
(pCi/kg wet)

Nuclide	2-MAY Bullhead				2-MAY Crappie				2-MAY Muskie			
SR-89	<	4.63E+02			<	5.02E+02			<	4.80E+02		
SR-90	<	1.34E+02			<	1.45E+02			<	1.40E+02		
BE-7	<	4.04E+02			<	4.88E+02			<	2.12E+02		
K-40		2.26E+03	+/-	2.40E+02		2.42E+03	+/-	2.63E+02		2.66E+03	+/-	1.34E+02
MN-54	<	3.46E+01			<	4.52E+01			<	1.60E+01		
CO-58	<	4.34E+01			<	6.26E+01			<	2.83E+01		
FE-59	<	1.22E+02			<	1.70E+02			<	7.32E+01		
CO-60	<	3.58E+01			<	4.41E+01			<	1.54E+01		
ZN-65	<	1.17E+02			<	1.67E+02			<	4.19E+01		
ZR-95	<	8.22E+01			<	8.74E+01			<	3.68E+01		
RU-103	<	6.04E+01			<	6.63E+01			<	2.85E+01		
RU-106	<	3.77E+02			<	3.65E+02			<	1.57E+02		
CS-134	<	3.93E+01			<	4.37E+01			<	1.67E+01		
CS-137	<	3.57E+01			<	4.15E+01			<	1.74E+01		
BA-140	<	3.10E+02			<	4.42E+02			<	2.10E+02		
CE-141	<	8.70E+01			<	2.06E+02			<	4.86E+01		
CE-144	<	1.69E+02			<	2.07E+02			<	8.40E+01		
TH-228	<	1.16E+02			<	1.36E+02			<	6.53E+01		

Nuclide	2-MAY Silver Bass				2-MAY Small Mouth Bass				2-MAY Sucker			
SR-89	<	5.17E+02			<	1.86E+03			<	3.96E+02		
SR-90	<	1.49E+02			<	2.38E+02			<	1.13E+02		
BE-7	<	4.82E+02			<	4.75E+02			<	4.49E+02		
K-40		2.30E+03	+/-	3.39E+02		3.10E+03	+/-	2.81E+02		2.04E+03	+/-	2.44E+02
MN-54	<	4.78E+01			<	4.51E+01			<	3.16E+01		
CO-58	<	5.48E+01			<	5.69E+01			<	5.56E+01		
FE-59	<	1.67E+02			<	1.74E+02			<	2.00E+02		
CO-60	<	6.22E+01			<	4.75E+01			<	3.76E+01		
ZN-65	<	1.54E+02			<	1.27E+02			<	1.03E+02		
ZR-95	<	1.02E+02			<	8.62E+01			<	7.98E+01		
RU-103	<	6.91E+01			<	7.28E+01			<	6.88E+01		
RU-106	<	3.05E+02			<	3.60E+02			<	2.94E+02		
CS-134	<	5.40E+01			<	4.43E+01			<	3.73E+01		
CS-137	<	4.37E+01			<	3.89E+01			<	3.83E+01		
BA-140	<	5.28E+02			<	3.49E+02			<	3.90E+02		
CE-141	<	1.01E+02			<	1.31E+02			<	9.81E+01		
CE-144	<	1.98E+02			<	1.97E+02			<	1.56E+02		
TH-228	<	3.00E+02			<	1.69E+02			<	3.29E+02		

FERMI 2
FISH ANALYSIS

F-1 (Control)
(pCi/kg wet)

Nuclide	2-MAY Walleye				2-MAY Yellow Perch				4-OCT Bullhead			
SR-89	<	6.17E+02			<	4.96E+02			<	2.62E+02		
SR-90	<	1.85E+02			<	1.45E+02			<	2.34E+02		
BE-7	<	3.78E+02			<	5.68E+02			<	2.17E+02		
K-40		3.38E+03	+/-	2.33E+02		2.67E+03	+/-	3.46E+02		1.78E+03	+/-	1.85E+02
MN-54	<	2.91E+01			<	6.26E+01			<	2.71E+01		
CO-58	<	4.28E+01			<	6.77E+01			<	2.55E+01		
FE-59	<	1.40E+02			<	2.50E+02			<	7.32E+01		
CO-60	<	2.31E+01			<	6.65E+01			<	2.19E+01		
ZN-65	<	7.63E+01			<	1.46E+02			<	8.13E+01		
ZR-95	<	6.78E+01			<	1.27E+02			<	4.40E+01		
RU-103	<	4.61E+01			<	9.25E+01			<	2.63E+01		
RU-106	<	1.85E+02			<	4.40E+02			<	2.41E+02		
CS-134	<	3.14E+01			<	5.09E+01			<	2.78E+01		
CS-137	<	2.83E+01			<	5.58E+01			<	2.63E+01		
BA-140	<	2.79E+02			<	4.52E+02			<	5.06E+01		
CE-141	<	8.70E+01			<	1.14E+02			<	3.54E+01		
CE-144	<	1.41E+02			<	2.38E+02			<	1.11E+02		
TH-228	<	9.54E+01			<	2.14E+02			<	1.36E+02		

Nuclide	4-OCT Sucker				4-OCT Walleye			
SR-89	<	2.23E+02			<	2.44E+02		
SR-90	<	2.25E+02			<	2.29E+02		
BE-7	<	2.72E+02			<	3.71E+02		
K-40		3.50E+03	+/-	2.47E+02		3.59E+03	+/-	4.03E+02
MN-54	<	3.14E+01			<	4.69E+01		
CO-58	<	3.59E+01			<	3.82E+01		
FE-59	<	1.06E+02			<	1.32E+02		
CO-60	<	2.94E+01			<	5.44E+01		
ZN-65	<	9.37E+01			<	9.40E+01		
ZR-95	<	5.89E+01			<	7.85E+01		
RU-103	<	4.77E+01			<	3.92E+01		
RU-106	<	3.20E+02			<	5.50E+02		
CS-134	<	3.36E+01			<	4.59E+01		
CS-137	<	3.26E+01			<	3.47E+01		
BA-140	<	7.01E+01			<	5.49E+01		
CE-141	<	4.38E+01			<	5.44E+01		
CE-144	<	1.50E+02			<	1.70E+02		
TH-228	<	1.52E+02			<	1.71E+02		

FERMI 2
FISH ANALYSIS

F-2 (Indicator)
(pCi/kg wet)

Nuclide	4-MAY Catfish				4-MAY Drum				4-MAY Silver Bass			
SR-89	<	4.29E+02			<	5.11E+02			<	4.37E+02		
SR-90	<	1.28E+02			<	1.52E+02			<	1.31E+02		
BE-7	<	3.68E+02			<	3.53E+02			<	4.10E+02		
K-40		2.45E+03	+/-	2.13E+02		2.34E+03	+/-	2.64E+02		1.81E+03	+/-	2.47E+02
MN-54	<	3.22E+01			<	5.11E+01			<	4.01E+01		
CO-58	<	4.15E+01			<	4.23E+01			<	5.30E+01		
FE-59	<	1.59E+02			<	1.65E+02			<	1.72E+02		
CO-60	<	2.59E+01			<	4.55E+01			<	3.03E+01		
ZN-65	<	6.69E+01			<	9.08E+01			<	9.71E+01		
ZR-95	<	7.07E+01			<	7.79E+01			<	7.73E+01		
RU-103	<	5.79E+01			<	5.02E+01			<	5.52E+01		
RU-106	<	2.90E+02			<	3.73E+02			<	3.65E+02		
CS-134	<	3.04E+01			<	3.72E+01			<	3.31E+01		
CS-137	<	3.29E+01			<	3.99E+01			<	3.37E+01		
BA-140	<	3.28E+02			<	3.13E+02			<	4.25E+02		
CE-141	<	1.21E+02			<	6.76E+01			<	8.10E+01		
CE-144	<	1.52E+02			<	1.51E+02			<	1.50E+02		
TH-228	<	1.46E+02			<	1.89E+02			<	1.09E+02		

Nuclide	4-MAY Walleye				4-MAY White Perch				4-MAY Yellow Perch			
SR-89	<	5.01E+02			<	3.74E+02			<	6.30E+02		
SR-90	<	1.48E+02			<	1.09E+02			<	1.93E+02		
BE-7	<	4.27E+02			<	4.28E+02			<	5.60E+02		
K-40		3.68E+03	+/-	3.09E+02		2.80E+03	+/-	3.69E+02		2.60E+03	+/-	3.43E+02
MN-54	<	3.12E+01			<	3.80E+01			<	6.77E+01		
CO-58	<	4.75E+01			<	5.29E+01			<	6.75E+01		
FE-59	<	1.98E+02			<	2.16E+02			<	2.57E+02		
CO-60	<	3.26E+01			<	6.63E+01			<	6.03E+01		
ZN-65	<	1.15E+02			<	1.07E+02			<	1.30E+02		
ZR-95	<	8.81E+01			<	1.16E+02			<	1.15E+02		
RU-103	<	5.97E+01			<	4.90E+01			<	9.24E+01		
RU-106	<	2.56E+02			<	5.71E+02			<	4.45E+02		
CS-134	<	3.19E+01			<	4.99E+01			<	5.51E+01		
CS-137	<	3.09E+01			<	5.28E+01			<	5.47E+01		
BA-140	<	4.75E+02			<	4.76E+02			<	5.44E+02		
CE-141	<	1.00E+02			<	8.72E+01			<	1.18E+02		
CE-144	<	2.00E+02			<	1.82E+02			<	2.28E+02		
TH-228	<	1.18E+02			<	1.88E+02			<	2.26E+02		

FERMI 2
FISH ANALYSIS

F-2 (Indicator)
(pCi/kg wet)

Nuclide	3-OCT Walleye				3-OCT White Bass				3-OCT Yellow Perch			
SR-89	<	2.88E+02			<	2.00E+02			<	2.66E+02		
SR-90	<	2.26E+02			<	2.33E+02			<	2.43E+02		
BE-7	<	3.90E+02			<	3.07E+02			<	3.48E+02		
K-40		3.34E+03	+/-	4.02E+02		3.37E+03	+/-	2.53E+02		3.55E+03	+/-	2.76E+02
MN-54	<	5.38E+01			<	3.35E+01			<	3.75E+01		
CO-58	<	4.08E+01			<	3.10E+01			<	4.07E+01		
FE-59	<	1.67E+02			<	1.03E+02			<	1.27E+02		
CO-60	<	6.89E+01			<	3.94E+01			<	4.14E+01		
ZN-65	<	1.42E+02			<	9.28E+01			<	1.25E+02		
ZR-95	<	9.08E+01			<	6.92E+01			<	7.25E+01		
RU-103	<	4.34E+01			<	4.94E+01			<	4.22E+01		
RU-106	<	4.08E+02			<	3.49E+02			<	4.10E+02		
CS-134	<	5.46E+01			<	3.16E+01			<	4.20E+01		
CS-137	<	5.05E+01			<	3.60E+01			<	4.39E+01		
BA-140	<	7.23E+01			<	7.83E+01			<	8.44E+01		
CE-141	<	5.76E+01			<	4.89E+01			<	5.42E+01		
CE-144	<	2.23E+02			<	1.49E+02			<	1.85E+02		
TH-228	<	2.02E+02			<	1.13E+02			<	1.37E+02		

FERMI 2
FISH ANALYSIS

F-3 (Control)
(pCi/kg wet)

Nuclide	3-MAY Drum				3-MAY Silver Bass				3-MAY Sucker			
SR-89	<	6.33E+02			<	6.38E+02			<	4.66E+02		
SR-90	<	1.90E+02			<	1.92E+02				1.43E+02	+/-	4.47E+01
BE-7	<	5.69E+02			<	3.93E+02			<	2.85E+02		
K-40		2.50E+03	+/-	2.76E+02		2.63E+03	+/-	2.72E+02		2.21E+03	+/-	1.99E+02
MN-54	<	4.83E+01			<	3.65E+01			<	2.48E+01		
CO-58	<	6.78E+01			<	4.92E+01			<	3.55E+01		
FE-59	<	1.80E+02			<	1.44E+02			<	1.17E+02		
CO-60	<	4.53E+01			<	3.67E+01			<	2.76E+01		
ZN-65	<	2.54E+02			<	1.05E+02			<	7.16E+01		
ZR-95	<	9.40E+01			<	9.59E+01			<	5.72E+01		
RU-103	<	7.53E+01			<	5.79E+01			<	4.49E+01		
RU-106	<	4.28E+02			<	2.82E+02			<	2.50E+02		
CS-134	<	4.87E+01			<	3.30E+01			<	2.36E+01		
CS-137	<	4.59E+01			<	3.15E+01			<	2.35E+01		
BA-140	<	4.28E+02			<	4.64E+02			<	2.59E+02		
CE-141	<	1.39E+02			<	8.37E+01			<	6.54E+01		
CE-144	<	2.25E+02			<	1.53E+02			<	1.21E+02		
TH-228	<	1.75E+02			<	1.35E+02			<	8.97E+01		

Nuclide	3-MAY Walleye				3-MAY White Perch				18-SEP Carp			
SR-89	<	5.14E+02			<	6.83E+02			<	2.01E+02		
SR-90	<	1.49E+02			<	2.05E+02			<	1.52E+02		
BE-7	<	3.06E+02			<	5.16E+02			<	4.76E+02		
K-40		2.83E+03	+/-	2.18E+02		2.65E+03	+/-	2.60E+02		2.15E+03	+/-	2.70E+02
MN-54	<	2.74E+01			<	3.79E+01			<	3.58E+01		
CO-58	<	3.10E+01			<	4.81E+01			<	4.47E+01		
FE-59	<	1.15E+02			<	1.96E+02			<	1.47E+02		
CO-60	<	2.40E+01			<	4.90E+01			<	4.49E+01		
ZN-65	<	6.75E+01			<	1.24E+02			<	1.14E+02		
ZR-95	<	6.77E+01			<	8.85E+01			<	8.10E+01		
RU-103	<	4.03E+01			<	7.20E+01			<	4.96E+01		
RU-106	<	2.72E+02			<	3.69E+02			<	4.04E+02		
CS-134	<	2.19E+01			<	4.23E+01			<	4.17E+01		
CS-137	<	2.82E+01			<	4.18E+01			<	4.31E+01		
BA-140	<	3.50E+02			<	3.74E+02			<	1.48E+02		
CE-141	<	8.22E+01			<	1.32E+02			<	8.00E+01		
CE-144	<	1.32E+02			<	1.93E+02			<	2.06E+02		
TH-228	<	1.03E+02			<	1.35E+02			<	1.31E+02		

FERMI 2
FISH ANALYSIS

F-3 (Control)
(pCi/kg wet)

Nuclide	18-SEP Catfish				18-SEP Drum				18-SEP Walleye			
SR-89	<	2.60E+02			<	2.84E+02			<	2.05E+02		
SR-90	<	1.60E+02			<	2.05E+02			<	2.01E+02		
BE-7	<	5.20E+02			<	4.00E+02			<	3.19E+02		
K-40		2.94E+03	+/-	3.84E+02		2.83E+03	+/-	4.05E+02		3.40E+03	+/-	3.07E+02
MN-54	<	5.48E+01			<	4.26E+01			<	3.70E+01		
CO-58	<	6.25E+01			<	5.68E+01			<	3.83E+01		
FE-59	<	1.93E+02			<	2.50E+02			<	1.60E+02		
CO-60	<	6.90E+01			<	7.02E+01			<	4.54E+01		
ZN-65	<	1.55E+02			<	8.85E+01			<	1.01E+02		
ZR-95	<	1.12E+02			<	8.66E+01			<	7.30E+01		
RU-103	<	7.31E+01			<	6.10E+01			<	4.65E+01		
RU-106	<	3.84E+02			<	3.41E+02			<	2.80E+02		
CS-134	<	4.89E+01			<	4.49E+01			<	3.36E+01		
CS-137	<	5.48E+01			<	5.11E+01			<	2.95E+01		
BA-140	<	2.61E+02			<	2.47E+02			<	1.45E+02		
CE-141	<	8.97E+01			<	7.88E+01			<	5.85E+01		
CE-144	<	2.43E+02			<	2.01E+02			<	1.94E+02		
TH-228	<	2.21E+02			<	1.72E+02			<	1.42E+02		

Nuclide	18-SEP White Perch			
SR-89	<	2.48E+02		
SR-90	<	2.00E+02		
BE-7	<	4.97E+02		
K-40		3.34E+03	+/-	3.06E+02
MN-54	<	4.53E+01		
CO-58	<	4.68E+01		
FE-59	<	1.64E+02		
CO-60	<	3.81E+01		
ZN-65	<	1.35E+02		
ZR-95	<	8.47E+01		
RU-103	<	8.30E+01		
RU-106	<	4.45E+02		
CS-134	<	4.15E+01		
CS-137	<	4.66E+01		
BA-140	<	2.88E+02		
CE-141	<	9.05E+01		
CE-144	<	1.99E+02		
TH-228	<	3.60E+02		

Appendix D

Environmental Program Execution

Environmental Program Execution

On occasions, samples cannot be collected. This can be due to a variety of events, such as equipment malfunction, loss of electrical power, severe weather conditions, or vandalism. In 2001, missed samples were a result of missing field TLDs, loss of electrical power to water sampling equipment, and lack of good growing conditions in a local garden. The following sections list all missed samples, changes and corrective actions during 2001. These missed samples did not have a significant impact on the execution of the REMP.

Starting January 1, 2001, Detroit Edison contracted with Duke Engineering & Services Environmental Laboratory. The sample analyses for 2001 were consistent with past analyses.

Direct Radiation Monitoring

All TLDs are placed in the field in inconspicuous locations to minimize the loss of TLDs due to vandalism. During 2001, two hundred sixty-eight (268) TLDs were placed in the field for the REMP program and all but two TLDs were collected and processed. T-36 was found missing during the first quarter collection and T-60 was found missing during the forth quarter. The two TLDs were missing as a result of vandalism.

Atmospheric Monitoring

During 2001, two hundred sixty (260) air samples were placed in the field, all but four particulate filters and charcoal filters were processed. During 2001 API-5 was moved to an adjacent utility pole as request by a local resident. There were no other changes to the Atmospheric Monitoring program.

- API-1 filters collected on 3/20/2001 were not counted due to low volume caused by an equipment failure. Sampling equipment was replaced. For this reason the first quarter composite sample for this location is considered to be less than representative.

- On 7/11/2001 sampling equipment at API-1 was found missing. Sampling equipment was replaced. For this reason the third quarter composite sample for this location is considered to be less than representative.

- API-2 filters collected on 10/2/2001 were not counted due to low volume caused by an equipment timer failure. Timer was reset on sampling equipment. For this reason the forth quarter composite sample for this location is considered to be less than representative.

- API-5 filters collected on 10/30/2001 were not counted due to low volume caused by power failure. Power fuse was replaced and equipment restored to operation. For this reason the forth quarter composite sample for this location is considered to be less than representative.

Terrestrial Monitoring

During 2001, all scheduled Terrestrial Monitoring samples were collected except at one garden location. There were no changes to the Terrestrial Monitoring program during 2001.

Milk Sampling

All scheduled milk samples were collected in 2001.

Garden Sampling

No samples were collected at location FP-7 due to landowner declining to participate in 2001. Since there a potential that the landowner will participate in the future and this is the location of the maximum exposed individual, FP-7 was not removed from the program in 2001.

Groundwater Sampling

All scheduled groundwater samples were collected in 2001.

Aquatic Monitoring

During 2001, twenty-five (25) drinking water samples, twenty-five (25) surface water samples, and ten (10) sediment samples were collected. In addition, thirty (30) fish samples were collected for the Aquatic Monitoring program. Due to equipment malfunction, two grab water samples were collected, one drinking water and one surface water. During the first quarter of 2001, the new analytical lab did not composite the monthly drinking and surface water samples. There were no changes to the Aquatic Monitoring program during 2001.

Drinking Water Sampling

On January 17, drinking water sampler DW-1 was found not operating due to malfunction of timer. A grab sample was taken and the timer was reset.

Surface Water Sampling

On November 6, surface water sampler SW-3 was found not operating due to loss of power. A grab sample was taken and the power was reset. For this reason the fourth quarter composite sample is considered less than representative.

Sediment Sampling

All scheduled sediment samples were collected in 2001.

Fish Sampling

All scheduled fish samples were collected in 2001.

Appendix E

Effluent and Radwaste Data

Regulatory Limits for Radioactive Effluents

The Nuclear Regulatory Commission limits on liquid and gaseous effluents are incorporated into the Fermi 2 Offsite Dose Calculation Manual. These limits prescribe the maximum doses and dose rates due to radioactive effluents resulting from normal operation of Fermi 2. These limits are described in the following sections.

A. Gaseous Effluents

I. Dose rate due to radioactivity released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following:

a) Noble gases

Less than or equal to 500 mrem/year to the total body
Less than or equal to 3000 mrem/year to the skin

b) Iodine-131, Iodine-133, tritium, and for all radionuclides in particulate form with half lives greater than 8 days

Less than or equal to 1500 mrem/year to any organ.

II. Air dose due to noble gases to areas at and beyond the site boundary shall be limited to the following:

a) Less than or equal to 5 mrad for gamma radiation
Less than or equal to 10 mrad for beta radiation
- During any calendar quarter

b) Less than or equal to 10 mrad for gamma radiation
Less than or equal to 20 mrad for beta radiation
- During any calendar year

III. Dose to a member of the public from Iodine-131, Iodine-133, tritium, and all radionuclides in particulate form with half lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

a) Less than or equal to 7.5 mrem to any organ
- During any calendar quarter

b) Less than or equal to 15 mrem to any organ
- During any calendar year

Note: The calculated site boundary dose rates for Fermi 2 are based on identification of individual isotopes and on use of dose factors specific to each identified isotope or a highly conservative dose factor. Average energy values are not used in these calculations, and therefore need not be reported.

B. Liquid Effluents

I. The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to ten times the concentrations specified in Title 10 of the Code of Federal Regulations (10 CFR) Part 20 (Standards for Protection Against Radiation), Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases, as required by the Fermi 2 Offsite Dose Calculation Manual. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 (.0002) microcuries/ml total activity. This limit is based on the Xe-135 air submersion dose limit converted to an equivalent concentration in water as discussed in the International Commission on Radiological Protection (ICRP) Publication 2.

II. The dose or dose commitment to a member of the public from radioactive materials in liquid effluents released to unrestricted areas shall be limited to the following:

a) Less than or equal to 1.5 mrem to the total body
Less than or equal to 5 mrem to any organ
- During any calendar quarter

b) Less than or equal to 3 mrem to the total body
Less than or equal to 10 mrem to any organ
- During any calendar year

Measurements and Approximations of Total Activity in Radioactive Effluents

As required by NRC Regulatory Guide 1.21, this section describes the methods used to measure the total radioactivity in effluent releases and to estimate the overall errors associated with these measurements. The effluent monitoring systems are described in Chapter 11.4 of the Fermi 2 Updated Final Safety Analysis Report (UFSAR).

A. Gaseous Effluents

I. Fission and Activation Gases

Samples are obtained from each of the six plant radiation monitors which continuously monitor the five ventilation exhaust points. The fission and activation gases are quantified by gamma spectroscopy analysis of periodic samples.

The summary values reported are the sums of all fission and activation gases quantified at all monitored release points.

II. Radioiodines

Samples are obtained from each of the six plant radiation monitors which continuously monitor the five ventilation exhaust points. The radioiodines are entrained on charcoal and then quantified by gamma spectroscopy analysis. For each sample the duration of sampling and continuous flow rate through the charcoal are used in determining the concentration of radioiodines. From the flow rate of the ventilation system a rate of release can be determined.

Prior to 2000, a collection efficiency factor of 1.00 had been assumed (based on vendor testing results) for the charcoal cartridges used to collect radioiodines. It was determined in 2000 that this factor could not be verified. Accordingly the value of 0.95, the nominal minimum value, was used starting in early 2001. In 2001, testing by an independent laboratory determined that this factor could have been as low as 89% for the type of charcoal cartridge and flow rate used. In late 2001, Fermi 2 began using a new type of charcoal cartridge with a collection efficiency of more than 99%. All affected data were reviewed, and it was determined that calculated offsite doses were well within acceptable limits.

The summary values reported are the sums of all radioiodines quantified at all continuously monitored release points.

III. Particulates

Samples are obtained from each of the six plant effluent radiation monitors which continuously monitor the five ventilation exhaust points. The particulates are collected on a filter and then quantified by gamma spectroscopy analysis.

For each sample, the duration of sampling and continuous flow rate through the filter are used in determining the concentration of particulates. From the flow rate of the ventilation system a rate of release can be determined.

Quarterly, the filters from each ventilation release point are composited and then radiochemically separated and analyzed for strontium (Sr)-89/90 using various analytical methods.

The summary values reported are the sums of all particulates quantified at all monitored release points.

IV. Tritium

Samples are obtained for each of the six plant effluent radiation monitors which continuously monitor the five ventilation exhaust points. The sample is passed through a bottle containing water and the tritium is "washed" out to the collecting water. Portions of the collecting water are analyzed for tritium using liquid scintillation counting techniques. For each sample, the duration of sample and sample flow rate is used to determine the concentration. From the flow rate of the ventilation system a release rate can be determined.

The summary values reported are the sums of all tritium quantified at all monitored release points.

V. Gross Alpha

The gaseous particulate filters from the six plant effluent radiation monitors are stored for one week to allow for decay of naturally occurring alpha emitters. These filters are then analyzed for gross alpha radioactivity by gas proportional counting, and any such radioactivity found is assumed to be plant related. The quantity of alpha emitters released can then be determined from sample flow rate, sample duration, and stack flow rate.

The summary values reported are the sums of all alpha emitters quantified at all monitored release points.

B. Liquid Effluents

The liquid radwaste processing system and the liquid effluent monitoring system are described in the Fermi 2 UFSAR. Fermi 2 released no radioactive liquid effluents in 2001.

C. Statistical Measurement Uncertainties

The statistical uncertainty of the measurements in this section has been calculated and summarized in the following table:

Measurement Type	Sample Type	One Sigma Uncertainty
Fission and Activation Gases	Gaseous	30%
Radioiodines	Gaseous	17%
Particulates	Gaseous	16%
Tritium	Gaseous	30%
Gross Alpha	Gaseous	16%

Gaseous Releases by Individual Nuclide

Values in the following tables which are preceded by the "less than" symbol represent the lower limit of detection (LLD) in units of microcuries per cubic centimeter (uCi/cc) for individual samples, and indicate that the nuclide in question was not detected in gaseous effluent samples in the indicated quarter of 2001. For quantities of gross alpha radioactivity and tritium in gaseous effluents, see Tables 3 and 4 on page 13 of this report.

A. Particulate Radionuclides (Curies)

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Cr-51	<5.4E-13	2.10E-03	<5.4E-13	7.35E-04
Mn-54	4.93E-06	1.62E-05	<6.2E-14	1.78E-05
Co-58	3.33E-05	1.29E-04	<6.4E-14	2.88E-05
Co-60	3.13E-05	1.36E-04	<1.2E-13	7.76E-05
Fe-59	<1.4E-13	<1.4E-13	<1.4E-13	7.75E-06
Zn-65	3.78E-05	1.61E-04	<1.9E-13	8.89E-06
Zn-69m	5.75E-04	9.09E-04	<4.9E-13	5.84E-05
Na-24	3.97E-04	1.21E-03	<5.8E-13	<5.8E-13
Mo-99	3.69E-05	<8.8E-13	<8.8E-13	<8.8E-13
Tc-99m	1.08E-03	4.99E-03	<8.7E-13	1.98E-04
Ba-139	1.57E+00	2.31E+00	1.11E+00	5.30E-01
La-140	1.90E-03	2.19E-03	1.35E-03	7.21E-04
Ba-140	1.11E-03	1.24E-03	7.02E-04	3.61E-04
Y-91m	1.72E-01	2.11E-01	2.63E-01	7.15E-02
Sr-91	1.19E-02	1.39E-02	8.32E-03	3.40E-03
Sr-92	6.31E-04	1.76E-03	<5.40E-12	<5.40E-12
Rb-89	1.94E+00	2.62E+00	1.21E+00	5.66E-01
Cs-138	1.05E+00	1.26E+00	7.22E-01	4.99E-01
Cs-139	9.65E-01	<2.0E-07	1.87E+00	<2.0E-07
Re-188	<1.6E-12	2.75E-04	<1.6E-12	<1.6E-12
As-76	1.71E-03	2.89E-03	1.52E-03	8.98E-04
Br-82	1.58E-05	<2.5E-13	<2.5E-13	5.63E-05
Sr-89	5.71E-04	2.53E-04	2.27E-04	2.11E-04
Sr-90	<1.6E-14	2.71E-06	<1.6E-14	1.44E-06
Cs-134	<3.7E-14	<3.7E-14	<3.7E-14	<3.7E-14
Cs-137	<6.8E-14	<6.8E-14	<6.8E-14	<6.8E-14
Ce-141	<7.2E-14	<7.2E-14	<7.2E-14	<7.2E-14
Ce-143	<2.9E-13	<2.9E-13	<2.9E-13	<2.9E-13
Ce-144	<2.7E-13	<2.7E-13	<2.7E-13	<2.7E-13
Total	**5.72E+00**	**6.43E+00**	**5.19E+00**	**1.67E+00**

B. Noble Gases

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Xe-133	<6.5E-08	<6.5E-08	<6.5E-08	5.61E-04
Xe-135	3.43E+00	3.39E-04	3.00E+00	4.76E-04
Xe-135m	6.81E+00	<2.7E-08	<2.7E-08	<2.7E-08
Xe-138	1.58E+01	1.47E+01	1.90E+01	<1.8E-07
Total	**2.60E+01**	**1.47E+01**	**2.20E+01**	**1.04E-03**

C. Radioiodines

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
I-131	4.64E-03	5.53E-03	6.85E-03	5.09E-03
I-132	6.77E-02	6.48E-02	7.64E-02	1.99E-02
I-133	3.91E-02	3.98E-02	5.59E-02	1.68E-02
I-134	1.96E-01	1.79E-01	1.90E-01	5.40E-02
I-135	8.05E-02	7.53E-02	1.04E-01	2.63E-02
Total	**3.88E-01**	**3.64E-01**	**4.33E-01**	**1.22E-01**

Note: The above radioiodine release activities may be underreported by as much as 11% in the 1st quarter and by as much as 6% in the 2nd and 3rd quarters due to an unverified collection efficiency factor. In no case would adjusting these activities for the maximum underreporting cause calculated offsite doses to be above a small fraction of applicable limits.

Shipments of Radwaste

Fermi 2 complies with the extensive federal regulations which govern radioactive waste shipments. Radioactive solid waste shipments from the Fermi 2 site consist of waste generated during water treatment, radioactive trash, irradiated components, etc. Shipment destinations are either licensed burial sites or intermediate processing facilities. Waste shipped to intermediate processing facilities is shipped directly from these facilities to licensed burial sites after processing. The following tables contain estimates of major nuclide composition, by class of waste, of Fermi 2 solid radwaste received at the Barnwell, SC, burial facility in 2001.

Fermi 2 also shipped 2 shipments of liquid mixed waste in 2001. The amount of radioactivity contained in these shipments was very small compared to shipments of solid radwaste. They were shipped to intermediate processors, where the material was incinerated.

a. **Spent resins, sludges, etc.** Waste in this category in 2001 consisted of spent resins only. All spent resin waste shipped for disposal in 2001 was shipped in High Integrity Containers or Polyethylene Liners. All waste in this category was Class A waste. All quantities were determined by measurement.

Radionuclide	Total Activity (mCi)	Percent of Total Activity
Ba-140	4.25E+00	0.02
C-14	3.08E+03	18.1
Ce-141	1.58E-01	< 0.01
Co-58	8.93E+01	0.52
Co-60	7.45E+03	43.8
Cr-51	7.68E+01	0.45
Cs-134	9.35E+01	0.55
Cs-137	6.33E+02	3.72
Fe-55	1.83E+03	10.8
H-3	1.20E+02	0.71
I-129 (LLD)	<1.29E-01	< 0.01
I-131	1.49E+00	0.01
La-140	8.75E-01	0.01
Mn-54	1.30E+03	7.65
Ni-63	5.06E+02	2.97
Sr-89	6.77E+02	3.98
Sr-90	9.72E+01	0.57
Tc-99	1.25E+02	0.74
Zn-65	9.27E+02	5.45
Total (mCi)	1.70E+04	100
Volume (ft3)	1.51E+03	
Disposal Site	Barnwell	

b. **Dry compressible waste, contaminated equipment, etc.** Waste in this category in 2001 was shipped in strong tight containers, and was classified as dry active waste (DAW). All waste in this category was Class A waste. The DAW was compacted on site or by an intermediate processor, or else it was incinerated by an intermediate processor. After incineration by an intermediate processor, some of the residue from this waste was solidified in concrete. All quantities were determined by measurement.

Radionuclide	Total Activity (mCi)	Percent of Total Activity
Ba-140	5.71E+00	0.06
C-14	1.71E+01	0.19
Ce-141	2.34E+00	0.03
Ce-144	8.03E+01	0.91
Cm-243	7.76E-04	< 0.01
Cm-244	6.77E-04	< 0.01
Co-57	7.21E-01	0.01
Co-58	2.30E+02	2.60
Co-60	2.38E+03	26.9
Cr-51	2.31E+03	26.1
Cs-134	1.31E+01	0.15
Cs-137	8.70E+01	0.99
Fe-55	3.04E+03	34.4
Fe-59	6.44E+01	0.73
H-3	1.17E+01	0.13
Hf-181	3.28E+01	0.37
I-129 (LLD)	<3.84E-01	< 0.01
Mn-54	2.39E+02	2.71
Nb-95	2.48E+01	0.28
Ni-59	2.08E-01	< 0.01
Ni-63	1.74E+01	0.20
Pu-238	1.89E-04	< 0.01
Pu-239	1.38E-04	< 0.01
Pu-240	1.38E-04	< 0.01
Pu-241	9.06E-03	< 0.01
Ru-103	1.33E+00	0.02
Sb-124	6.46E+00	0.07
Sn-113	7.51E-01	0.01
Sr-89	6.30E-03	< 0.01
Sr-90	4.88E-03	< 0.01
Tc-99	3.39E-01	< 0.01
Zn-65	2.52E+02	2.86
Zr-95	1.47E+01	0.17
Total (mCi)	8.82E+03	100
Volume (ft3)	1.08E+03	
Disposal Site	Barnwell	

Irradiated components, control rods, etc. No waste in this category was shipped to Barnwell, SC.

d. Other No waste in this category was shipped to Barnwell, SC.

Appendix F

Interlaboratory Comparison Data

Interlaboratory Comparison Program for 2001

In an interlaboratory comparison program, participant laboratories receive from a commerce source, environmental samples of known activity concentration for analysis. After the samples have been analyzed by the laboratory, the manufacturer of the sample reports the known activity concentration of the samples to the laboratory. The laboratory compares its results to the reported concentrations to determine any significant deviations, investigates such deviations if found, and initiates corrective action if necessary. Participation in this program provides assurance that the contract laboratory is capable of meeting accepted criteria for radioactivity analysis.

In 2001, Duke Engineering performed one hundred-two (102) analyses of environmental samples from Analytics. All but three of the results were within the acceptance criteria. The results are shown in the following table and all deviations, investigations and corrective actions taken by Duke Engineering are described in the foot notes.

ANALYTICS CROSS CHECK COMPARISON PROGRAM 2001

Table F-1

Media	Nuclide	Duke Engineering Result(a)	Analytics Result	Ratio(b)
Filter	Sr-89	59.57	85	0.70 (c)
	Sr-90	42.4	41	1.03
	Gr-Alpha	20.27	21	0.97
	Gr-Beta	136.07	114	1.19
Water	H-3	9656.67	10082	0.96
Milk	I-131	86.23	85	1.01
	I-131LL	88.87	85	1.05
	Ce-141	361.63	356	1.02
	Cr-51	521.33	503	1.04
	Cs-134	84.27	85	0.99
	Cs-137	203.77	199	1.02
	Co-58	79	76	1.04
	Mn-54	161.5	152	1.06
	Fe-59	92.6	82	1.13
	Zn-65	147.63	148	1.00
	Co-60	184.63	184	1.00
Water	I-131	88	90	0.98
	I-131LL	89	90	0.99
	Ce-141	100	94	1.06
	Cr-51	236	242	0.98
	Cs-134	120	129	0.93
	Cs-137	97	102	0.95
	Co-58	48	48	1.00
	Mn-54	103	101	1.02
	Fe-59	88	84	1.05
	Zn-65	187	186	1.01
	Co-60	144	147	0.98
Water	Gr-Alpha	40	39	1.03
	Gr-Beta	300	268	1.12
Filter	Gr-Alpha	30	30	1.00
	Gr-Beta	229	211	1.18
Milk	I-131	78	77	1.01
	I-131LL	74	77	0.96
	Ce-141	166	162	1.02
	Cr-51	455	418	1.09
	Cs-134	217	223	0.97
	Cs-137	173	176	0.98
	Co-58	86	82	1.05

ANALYTICS CROSS CHECK COMPARISON PROGRAM 2001

Table F-1 (cont.)

Media	Nuclide	Duke Engineering Result(a)	Analytics Result	Ratio(b)
Milk (cont.)	Mn-54	185	175	1.06
	Fe-59	151	146	1.03
	Zn-65	328	322	1.02
	Co-60	252	254	0.99
Water	Am-241	5.6	6.0	0.93
	Pu-238	7.2	7.5	0.96
	Pu-239	5.5	5.5	1.00
	Np-237	9.6	7.9	1.22 (d)
	Cm-244	5.6	6.3	0.89
Water	Ra-226	51	50	1.02
	Ra-228	63	63	1.00
Milk	I-131	63	69	0.91
	I-131LL	66	69	0.96
	Ce-141	165	163	1.01
	Cr-51	228	224	1.02
	Cs-134	131	134	0.98
	Cs-137	128	121	1.06
	Co-58	97	96	1.01
	Mn-54	154	150	1.03
	Fe-59	91	88	1.03
	Zn-65	180	182	0.99
	Co-60	138	135	1.03
Filter	Ce-141	91	96	0.95
	Cr-51	130	132	0.98
	Cs-134	74	79	0.94
	Cs-137	77	71	1.08
	Co-58	57	57	1.00
	Mn-54	99	88	1.13
	Fe-59	58	51	1.14
	Zn-65	118	107	1.10
	Co-60	77	79	0.97
Water	H-3	7007	7494	0.94
Filter	Sr-89	89	84	1.06
	Sr-90	75	64	1.17

ANALYTICS CROSS CHECK COMPARISON PROGRAM 2001

Table F-1 (cont.)

Media	Nuclide	Duke Engineering Result(a)	Analytics Result	Ratio(b)
Water	I-131	63	60	1.05
	I-131LL	62	60	1.04
	Ce-141	96	88	1.09
	Cr-51	275	265	1.04
	Cs-134	113	116	0.97
	Cs-137	234	232	1.01
	Co-58	132	128	1.03
	Mn-54	153	149	1.03
	Fe-59	66	62	1.06
	Zn-65	184	184	1.00
	Co-60	195	193	1.01
Water	Gr-Alpha	84	78	1.08
	Gr-Beta	175	205	0.85
Filter	Gr-Alpha	51	50	1.02
	Gr-Beta	136	133	1.02
Milk	I-131	90	91	0.99
	I-131LL	91	91	1.00
	Ce-141	131	121	1.08
	Cr-51	374	366	1.02
	Cs-134	157	160	0.98
	Cs-137	323	319	1.01
	Co-58	182	177	1.03
	Mn-54	211	205	1.03
	Fe-59	87	86	1.01
	Zn-65	261	254	1.03
	Co-60	274	266	1.03
Water	Sr-89	87	85	1.02
	Sr-90	61	59	1.03
Milk	Sr-89	121	75	1.61 (e)
	Sr-90	49	50	0.98

Footnotes:

(a) *Duke Engineering Results - Units are pCi/liter for water and milk. Units are total pCi for air particulate filters.*

(b) *Ratio of Duke Engineering to Analytics Results.*

(c) *Investigation determined that Sr-89: Sr-90 ratio was lower than desirable for the strontium technique. The QC schedule was revised to incorporate a higher ratio. Training of qualified technicians is pending.*

(d) *Np-237 failed high due to glassware contamination.*

(e) *Sr-89 failed high, investigation ongoing.*

Appendix G

Meteorological Data

Fermi 2 Joint Frequency Distribution Tables - 2001

Table G-1 *Stability Class A*

Wind Speed (MPH)	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*	*SSE*	*S*	*SSW*	*SW*	*WSW*	*W*	*WNW*	*NW*	*NNW*	*Total*
0 *to* 0.75	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
0.76 *to* 2.5	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	**4**
2.51 *to* 4.5	1	3	0	2	6	6	5	1	2	2	1	5	6	12	9	2	**63**
4.51 *to* 6.5	5	3	6	3	11	23	38	22	24	19	6	24	20	32	18	10	**264**
6.51 *to* 8.5	9	8	9	9	19	42	47	29	33	16	10	25	23	35	19	19	**352**
8.51 *to* 11.5	11	8	9	9	13	24	29	24	30	30	29	23	13	28	23	11	**314**
11.51 *to* 14.5	1	0	0	0	11	3	0	1	1	4	0	1	2	10	1	1	**36**
14.51 *to* 18.5	1	0	0	0	9	2	0	0	0	0	0	0	0	0	0	1	**13**
18.51 *to* 23.5	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	**3**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**38**	**22**	**24**	**23**	**69**	**102**	**119**	**77**	**90**	**72**	**47**	**79**	**64**	**117**	**70**	**44**	

Table G-2 *Stability Class B*

Wind Speed (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
0 *to* 0.75	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	**4**
0.76 *to* 2.5	0	0	0	0	1	0	0	0	1	0	1	0	1	1	1	0	**6**
2.51 *to* 4.5	1	2	5	1	3	4	6	2	0	5	1	9	5	6	4	8	**62**
4.51 *to* 6.5	4	2	2	3	3	4	7	5	10	12	6	16	22	4	8	6	**114**
6.51 *to* 8.5	9	3	6	2	8	6	6	7	9	18	19	21	5	8	7	17	**151**
8.51 *to* 11.5	2	2	0	1	7	3	8	3	6	23	28	8	8	7	0	7	**113**
11.51 *to* 14.5	0	1	0	0	1	1	0	0	0	3	6	3	0	1	0	0	**16**
14.51 *to* 18.5	0	1	0	0	1	0	0	0	0	2	3	1	0	0	0	0	**8**
18.51 *to* 23.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**18**	**11**	**13**	**7**	**24**	**18**	**27**	**17**	**26**	**63**	**64**	**58**	**41**	**27**	**20**	**40**	

Table G-3 *Stability Class C*

Wind Speed (MPH)	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*	*SSE*	*S*	*SSW*	*SW*	*WSW*	*W*	*WNW*	*NW*	*NNW*	*Total*
0 *to* 0.75	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**6**
0.76 *to* 2.5	2	0	1	0	0	0	1	0	0	1	2	2	0	1	1	0	**11**
2.51 *to* 4.5	5	1	1	2	3	8	5	6	5	8	12	13	9	7	6	4	**95**
4.51 *to* 6.5	8	4	7	6	12	14	14	8	12	18	16	15	19	11	10	20	**194**
6.51 *to* 8.5	0	1	8	3	5	5	7	13	9	23	21	11	18	10	6	16	**156**
8.51 *to* 11.5	9	0	1	5	9	14	7	8	1	21	30	13	3	10	9	2	**142**
11.51 *to* 14.5	0	3	0	1	4	1	2	0	0	5	11	3	0	1	0	3	**34**
14.51 *to* 18.5	1	0	0	0	7	6	0	0	0	1	2	1	0	0	0	0	**18**
18.51 *to* 23.5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**30**	**9**	**18**	**17**	**40**	**48**	**36**	**35**	**27**	**77**	**97**	**58**	**49**	**40**	**32**	**45**	

Table G-4 *Stability Class D*

Wind Speed (MPH)	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*	*SSE*	*S*	*SSW*	*SW*	*WSW*	*W*	*WNW*	*NW*	*NNW*	*Total*
0 *to* 0.75	4	0	0	0	2	0	0	0	0	1	0	0	0	1	0	2	**10**
0.76 *to* 2.5	10	7	1	8	4	2	3	3	6	5	8	20	14	11	15	4	**121**
2.51 *to* 4.5	10	18	8	14	8	11	15	14	20	27	58	69	65	46	40	31	**454**
4.51 *to* 6.5	23	30	33	24	29	45	27	24	27	44	117	130	53	50	49	60	**765**
6.51 *to* 8.5	22	22	69	31	44	35	30	25	37	57	126	107	53	45	34	37	**774**
8.51 *to* 11.5	21	15	45	36	64	46	32	23	29	82	134	37	22	33	22	28	**669**
11.51 *to* 14.5	3	22	12	7	34	13	11	13	6	36	54	19	6	6	4	6	**252**
14.51 *to* 18.5	1	1	4	0	11	2	0	1	0	18	15	7	2	2	0	1	**65**
18.51 *to* 23.5	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	**5**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	2	2	0	4	1	0	0	0	0	0	0	0	0	0	0	0	**9**
Total	**96**	**117**	**172**	**124**	**197**	**154**	**118**	**103**	**125**	**272**	**516**	**390**	**215**	**194**	**164**	**169**	

Table G-5 *Stability Class E*

Wind Speed (MPH)	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*	*SSE*	*S*	*SSW*	*SW*	*WSW*	*W*	*WNW*	*NW*	*NNW*	*Total*
0 *to* 0.75	6	0	1	2	0	0	0	0	0	0	2	1	2	1	1	9	**25**
0.76 *to* 2.5	6	7	7	3	6	14	8	6	12	31	27	38	35	27	20	11	**258**
2.51 *to* 4.5	31	39	22	13	13	19	12	12	21	37	110	103	66	71	38	37	**644**
4.51 *to* 6.5	33	21	18	16	26	35	29	28	65	88	70	40	18	37	24	39	**587**
6.51 *to* 8.5	13	14	7	13	19	28	18	26	57	112	46	7	3	9	4	17	**393**
8.51 *to* 11.5	10	1	2	4	13	23	24	14	43	97	19	0	0	3	1	1	**255**
11.51 *to* 14.5	0	0	1	0	0	1	10	9	2	50	10	0	0	0	1	0	**84**
14.51 *to* 18.5	0	0	0	0	0	0	1	12	3	9	3	0	0	0	0	0	**28**
18.51 *to* 23.5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	**2**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**99**	**82**	**58**	**51**	**77**	**120**	**103**	**107**	**203**	**425**	**287**	**189**	**124**	**148**	**89**	**114**	

Table G-6 *Stability Class F*

Wind Speed (MPH)	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*	*SSE*	*S*	*SSW*	*SW*	*WSW*	*W*	*WNW*	*NW*	*NNW*	*Total*
0 *to* 0.75	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	**7**
0.76 *to* 2.5	13	5	1	0	1	2	2	7	16	13	23	33	39	39	14	8	**216**
2.51 *to* 4.5	17	7	4	0	5	4	3	7	9	39	32	41	18	36	24	22	**268**
4.51 *to* 6.5	8	1	0	0	3	4	3	9	2	24	2	0	3	5	1	5	**70**
6.51 *to* 8.5	1	0	0	0	0	3	9	1	15	13	0	0	0	0	0	0	**42**
8.51 *to* 11.5	0	0	0	0	2	5	2	3	12	9	1	0	0	0	0	0	**34**
11.51 *to* 14.5	0	0	0	0	0	1	3	11	2	6	0	0	0	0	0	0	**23**
14.51 *to* 18.5	0	0	0	0	0	0	4	5	1	2	0	0	0	0	0	0	**12**
18.51 *to* 23.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**40**	**13**	**5**	**0**	**11**	**19**	**26**	**43**	**57**	**106**	**58**	**74**	**60**	**81**	**39**	**40**	

Table G-7 *Stability Class G*

Wind Speed (MPH)	*N*	*NNE*	*NE*	*ENE*	*E*	*ESE*	*SE*	*SSE*	*S*	*SSW*	*SW*	*WSW*	*W*	*WNW*	*NW*	*NNW*	*Total*
0 *to* 0.75	1	2	0	0	1	1	0	0	1	0	1	0	1	0	0	1	**9**
0.76 *to* 2.5	3	3	0	1	0	2	2	3	2	6	8	12	29	30	14	5	**120**
2.51 *to* 4.5	3	0	0	0	1	3	4	0	1	5	1	10	5	20	9	12	**74**
4.51 *to* 6.5	0	0	0	0	0	1	4	1	1	1	0	0	0	1	0	1	**10**
6.51 *to* 8.5	0	0	0	0	0	1	1	0	0	4	0	0	0	0	0	0	**6**
8.51 *to* 11.5	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	**2**
11.51 *to* 14.5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	**2**
14.51 *to* 18.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18.51 *to* 23.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
23.51 *to* 30.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
30.51 *to* 39.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
39.51 *to* 42.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**7**	**5**	**0**	**1**	**2**	**10**	**11**	**6**	**5**	**16**	**10**	**22**	**35**	**51**	**23**	**19**	

2001 Wind Rose

All Stability Classes

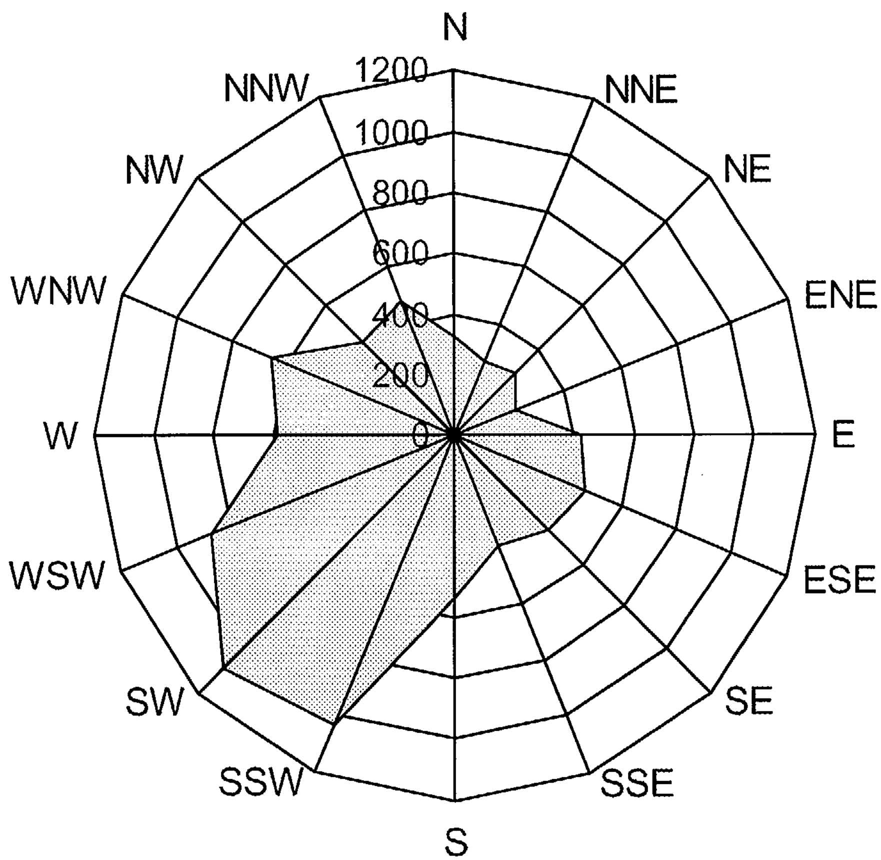

Figure 7

Direction and number of hours the wind was traveling from at 10 meters.