William T. O'Connor, Jr.
Vice President, Nuclear Generation

Fermi 2
6400 North Dixie Hwy., Newport, Michigan 48166
Tel: 734-586-5201 Fax: 734-586-4172

DTE Energy

April 29, 2003
NRC-03-0043

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

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 2002 Annual Radiological 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, 2002 through December 31, 2002.

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

Sincerely,

William T. O' Connor Jr.

Attachment

cc: w/Attachment

M. A. Ring
J. F. Stang, Jr.
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 - 2002 Annual
Radioactive Effluent Release and
Radiological Environmental Operating Reports

for the period of
January 1, 2002 through December 31, 2002

Prepared by:

Fermi 2
Radiological Engineering

Table of Contents — *Page*

Table of Contents — *Page*

Table of Contents — *Page*

List of Figures — *Page*

List of Tables — *Page*

Executive Summary

This report is published to provide information regarding effluent and radiological environmental monitoring at the Fermi 2 Nuclear Power Plant. The 2002 Annual Radioactive Effluent Release and Radiological Environmental Operating Reports cover the period from January 1, 2002 through December 31, 2002.

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 monitoring and effluent monitoring of plant systems. Both types of monitoring indicate that the operation of Fermi 2 does not result in significant exposure of people or the environment surrounding Fermi 2 and 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 2002. In fact, there has not been a liquid radioactive discharge from Fermi 2 since 1994. Also, noble gases were not detected in noble gas effluent samples in 2002.

The highest potenial single organ dose to a person living offsite due to iodines and particulates released from the plant was calculated to be 0.2 mrem, which is 1% of the applicable Appendix I of 10 CFR 50 limit.

Also during 2002, 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 2002.

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 2002, noble gases were not detected in noble gas effluent samples.

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 radiation 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 monitored 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.

Radioactive Effluent Monitoring Results

This section summarizes the results of effluent monitoring and offsite dose calculation for the year 2002, 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 2002. In fact, there has not been a liquid radioactive discharge from Fermi 2 since 1994. The 2002 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 2002.

The data in the following tables represent continuous releases, since in 2002 there were no batch releases (containment purges) in which radioactivity was detected.

Note that the values in the fission and activation gases summary table, and two 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 noble gases were not detected in noble gas effluent samples in 2002, and that tritium was not detected in tritium samples in 2 of the 4 quarters of 2002. (For noble gases, the value <3.0E-07 is the sum of the LLD values for 4 common noble gases isotopes listed in Appendix E.)

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

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Total Release (curies)	<3.0E-07	<3.0E-07	<3.0E-07	<3.0E-07
Average Release Rate for Period (μCi/sec)	NA	NA	NA	NA

Table 2 - Radioiodines Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Total I-131 (curies)	1.77E-03	2.26E-03	2.43E-03	2.82E-03
Average Release Rate for Period (µCi/sec)	2.28E-04	2.87E-04	3.06E-04	3.55E-04

Table 3 - Particulates Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Particulates with half lives > 8 days (curies)	3.36E-04	1.80E-03	4.52E-03	1.29E-04
Average Release Rate for Period (µCi/sec)	4.33E-05	2.29E-04	5.70E-04	1.63E-05
Gross Alpha Radioactivity (curies)	4.88E-07	1.54E-06	1.64E-06	5.90E-07

Table 4 - Tritium Summary

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Total Release (LLD in uCi/cc)	<4.0E-08	<4.0E-08	1.07E+00	1.66E-01
Average Release Rate for Period (µCi/sec)	N.A.	N.A.	1.35E-01	2.09E-02

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	2002 Gaseous Effluent Dose to Receptor with Highest Single Organ Dose
Bone	0.02 mrem
Liver	0.01 mrem
Thyroid	0.2 mrem
Kidney	0.01 mrem
Lung	0.01 mrem
GI-LLI	0.01 mrem
Total body	0.01 mrem

The highest single organ dose is 0.2 mrem to the thyroid. This is 1% 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 2002, gamma and beta air dose was not calculated because noble gases were not detected in noble gas effluent samples.

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 2002, 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 2002.

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 2002 was 0.01 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 2002. 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, or at the Envirocare, UT, facility in 2002 is summarized in the following table.

Table 6 - Solid Waste Received At Burial Sites

Type of waste	Unit	12 month period	Est. total activity error, %
Spent resins, sludges, etc.	m^3 curies	3.50E+01 5.74E+01	± 25
Dry compressible waste, contaminated equipment, etc.	m^3 curies	1.92E+01 1.12E+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 2002 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.	9	tractor trailer	Duratek

One revision to the ODCM was implemented in 2002. Appendix H of this report contains the revised ODCM pages, together with supporting documentation for the changes made.

In 2002, 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 2002.

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. In this process, 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. These 18 TLDs are affected by Hydrogen Water Chemistry's sky shine and are not representative of off site dose. 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 2002, the average exposure for TLDs at all off-site indicator locations was 13.8 mR/std qtr and for all control locations was 13.3 mR/std qtr. These exposures are consistent with preoperational and past operational measurements as shown in Figure 1.

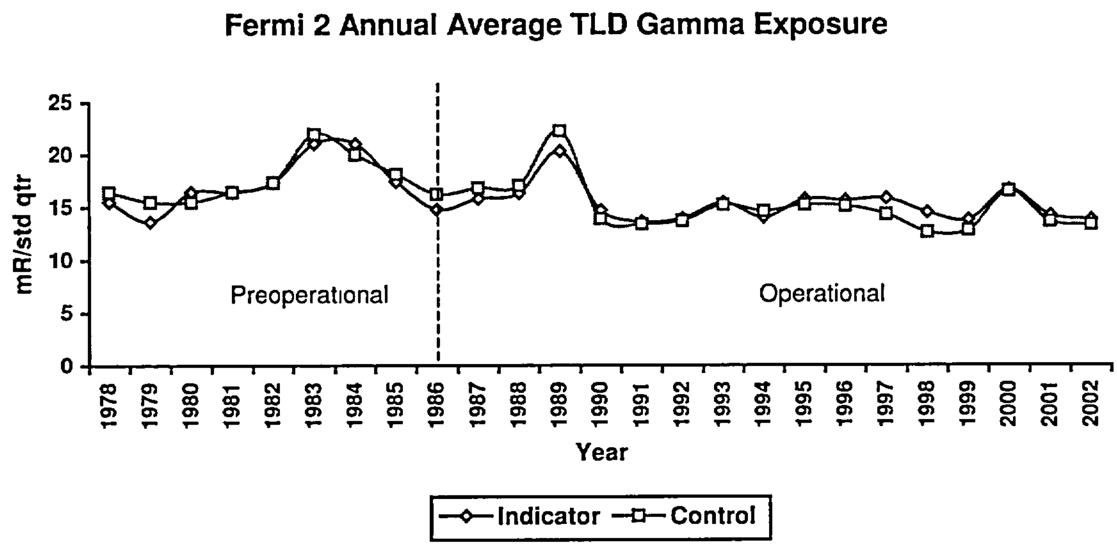


Figure 1 - Fermi 2 Annual Average TLD Gamma Exposure; The similarity between indicator and control results demonstrates that the operation of Fermi 2 has not caused any abnormal gamma exposure.

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 2002, two hundred and forty-eight (248) 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 2.63E-2 pCi/cubic meter and 2.61E-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 2002.

2002 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.)	2.47E-2
API-2 (I)	Site Boundary (NNW/0.6 mi.)	2.66E-2
API-3 (I)	Site Boundary (NW/0.6 mi.)	2.62E-2
API-4 (C)	North Custer Rd. (W/14 mi.)	2.61E-2
API-5 (I)	Site Boundary (S/1.2 mi.)	2.76E-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.

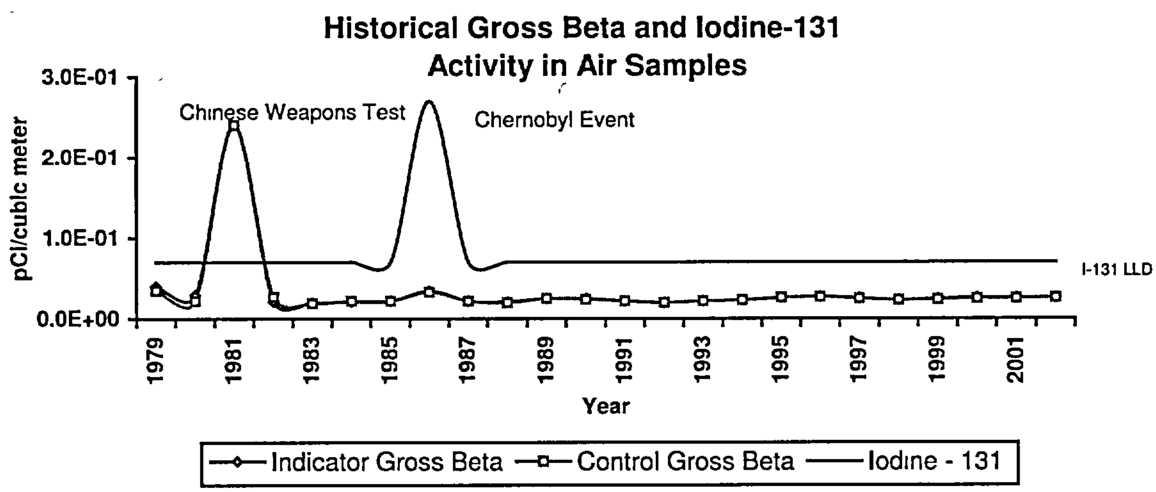


Figure 2 - Historical Gross Beta and Iodine-131 Activity in Air Samples; The similarity between indicator and control gross beta results demonstrates that the operation of Fermi 2 has had no adverse long-term trends in the environment. The lower limit of detection (LLD) for iodine-131 is 0.07 pCi/cubic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

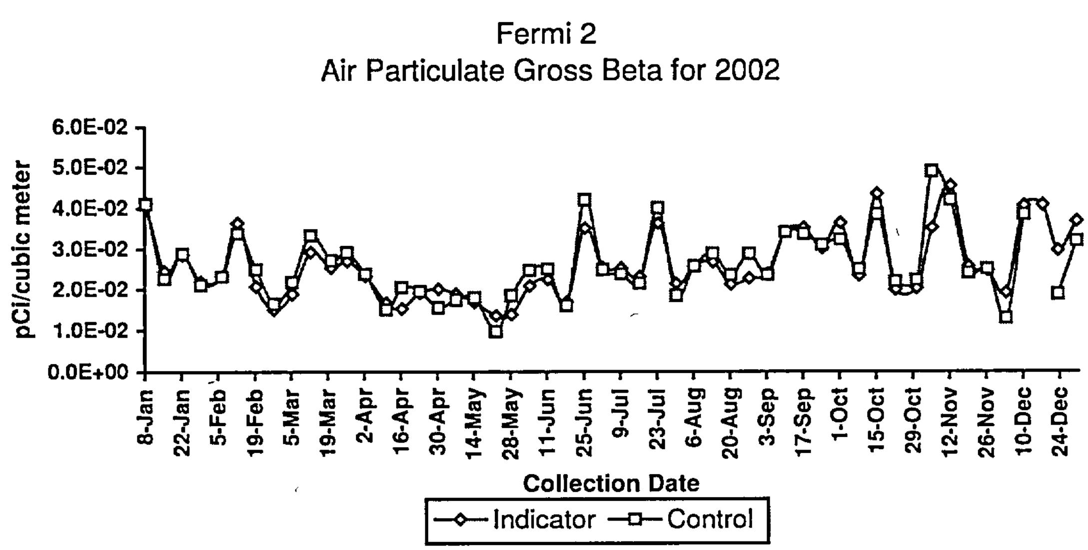


Figure 3 - Fermi 2 Air Particulate Gross Beta for 2002; The concentration of beta emitting radionuclides in airborne particulates samples was essentially identical at indicator and control locations. Gross beta activity varies throughout the year and is primarily an effect of seasonal precipitation.

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 2002 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 2002, 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 1.95E+0 pCi/liter and the control samples had an average concentration of 2.33E+0 pCi/liter. During 2002, 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.

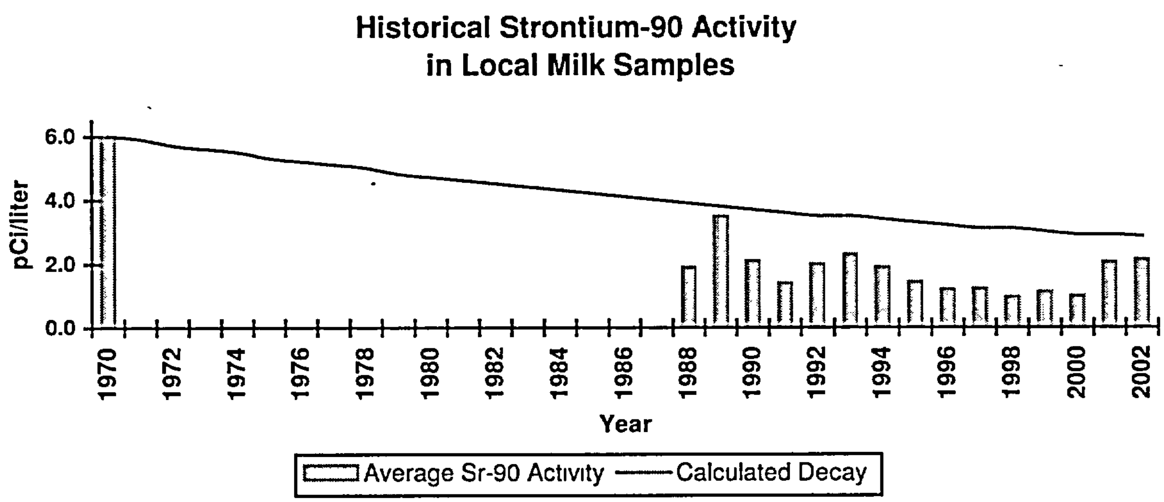


Figure 4 - Historical Strontium-90 Activity in Local Milk Samples; The concentration of strontium-90 in local milk samples is decreasing with time and is below the calculated decay curve. This supports the fact that strontium-90 in local milk is due to fallout from past atmospheric nuclear weapons testing 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 2001 no activity was detected in groundwater samples.

In 2002, 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 2002, 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 2002. The only gamma emitting radionuclide detected was naturally occurring potassium-40.

Terrestrial monitoring results for 2002 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 2002 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 2001, the average annual gross beta activity for indicator samples was 3.21E+0 pCi/liter and 2.56E+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 2002, twenty-four (24) 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 5.56E+0 and also 4.44E+0 pCi/liter for control samples. No gamma emitting radionuclides or strontium-89/90 activity was detected in drinking water samples during 2002. Six (6) quarterly composite drinking water samples were prepared and analyzed for tritium. No tritium activity was detected in drinking water samples during 2002.

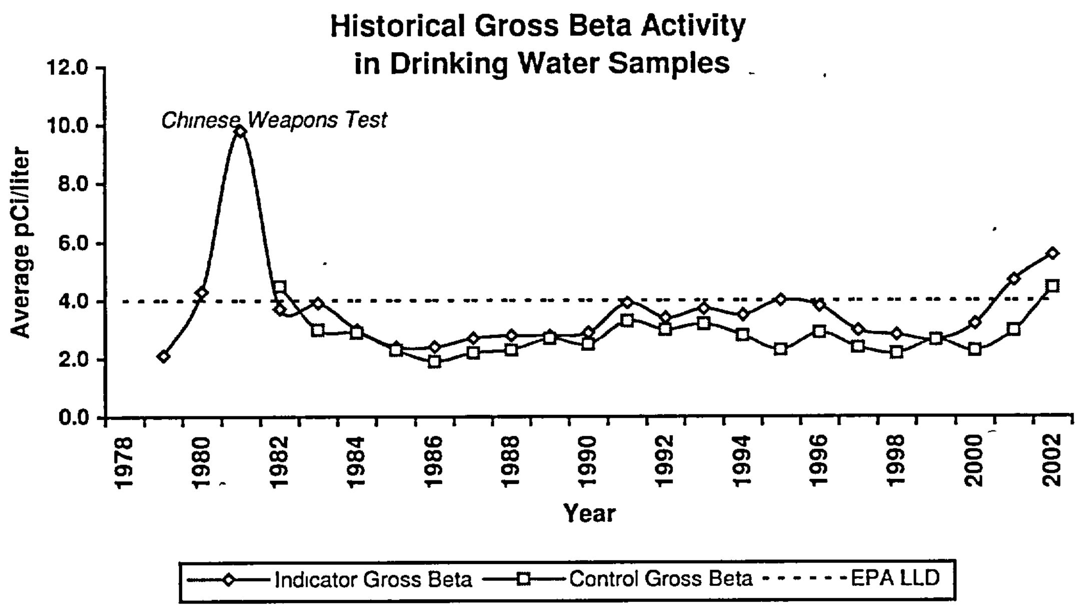


Figure 5 - Historical Gross Beta Activity in Drinking Water Samples; Since 1982, the annual concentrations of beta emitting radionuclides in drinking water samples collected from indicator locations have been consistent with those from control locations. This shows that Fermi 2 has had no measurable 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 2001, 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 2002, 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 2002, 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 2001, 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 2002, ten (10) sediment samples were collected and analyzed for gamma emitting radionuclides and strontium 89/90. Cesium-137 was detected in two control samples with an average concentration of 8.20E+1 pCi/kilogram. The presence of cesium-137 in sediment samples is due to fallout from past atmospheric nuclear weapons testing. Naturally occurring radionuclides of potassium and beryllium were also detected in sediment samples for this sampling period.

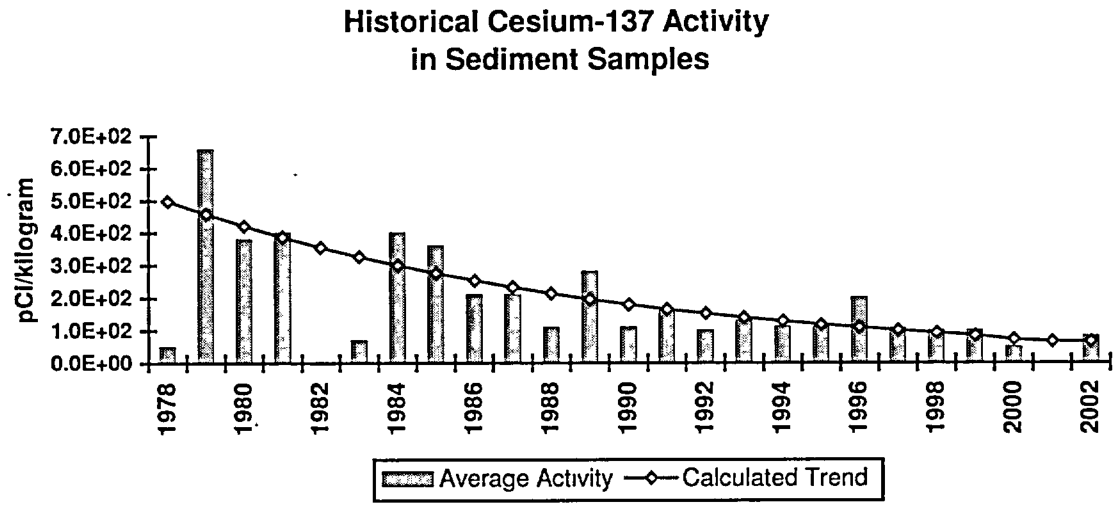


Figure 6 - Historical Cesium-137 Activity in Sediment Samples; As the calculated trend shows, the concentration of cesium-137 in Lake Erie sediments is decreasing with time. This supports the fact that cesium-137 in Lake Erie sediments is due to fallout from past atmospheric nuclear weapons testing and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

Figure 6 shows the historical concentration of cesium-137 in sediment samples from 1978 to 2002. 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 2001, 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 3.15E+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 2002, thirty-one (31) fish samples were collected and analyzed for gamma emitting radionuclides and strontium-89/90. Only naturally occurring potassium-40 was detected in fish samples.

Aquatic monitoring results for 2002 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 2002 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.

2002 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 2002 Land Use Census was performed during the month of August. The 2002 census data were obtained with the use of a hand-held Global Positioning System (GPS). These data were compared to the 2001 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 2001 and 2002 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 all but three Met Sectors in the category of closest gardens. See Table 10 for these changes. The "maximum exposed individual" is located in the West-North-West sector and no longer participates in the REMP program. However, the location still maintains a potential for a garden. In the category of closest milk locations, no new milk cow locations were identified. All other milk locations are goat milk and are not used for human consumption. There were no changes in the category of closest meat location in 2002. As with 2001, this census identified new residential housing construction that 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 2002 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 and is described as follows:

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

2002 LAND USE CENSUS
Closest Residences

Table 9

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2001	NE	34.7	1773	
2002	NE	34.7	1773	0
2001	NNE	11.2	1646	
2002	NNE	11.2	1646	0
2001	N	7.7	1776	
2002	N	7.7	1776	0
2001	NNW	332.8	1743	
2002	NNW	332.8	1743	0
2001	NW	309.9	1700	
2002	NW	309.9	1700	0
2001 (a)	WNW	303.5	1103	
2002	WNW	303.5	1103	0
2001	W	258.3	1861	
2002	W	258.3	1861	0
2001	WSW	238.2	2547	
2002	WSW	238.2	2547	0
2001	SW	230.3	2025	
2002	SW	230.3	2025	0
2001	SSW	200.4	1826	
2002	SSW	200.4	1826	0
2001	S	170.0	1640	
2002	S	170.0	1640	0
	ESE-SSE	Lake Erie		NA

(a) = Location of "maximum exposed individual"

2002 LAND USE CENSUS
Closest Gardens

Table 10

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2001	NE	32.9	3173	
2002	NE	39.4	3200	27
2001	NNE	15.9	1750	
2002	NNE	30.6	2894	1144
2001	N	358.9	3516	
2002	N	0.54	2633	883
2001	NNW	332.3	4087	
2002	NNW	327.0	2256	1831
2001	NW	309.9	1700	
2002	NW	325.0	2179	479
2001(a)	WNW	303.5	1103	
2002	WNW	303.5	1103	0
2001	W	265.8	2488	
2002	W	269.0	5130	2642
2001	WSW	240.4	4502	
2002	WSW	247.0	4740	238
2001	SW	234.1	7066	
2002	SW	234.1	7066	0
2001	SSW	194.9	2463	
2002	SSW	194.9	2463	0
2001	S	181.9	1938	
2002	S	None		NA
	ESE - SSE	Lake Erie		NA

(a) = Location of "maximum exposed individual"

2002 LAND USE CENSUS

Milk Locations

Table 11

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2001	NE	None		
2002	NE	None		N/A
2001	NNE	None		
2002	NNE	None		N/A
2001	N	9.06	6686	
2002	N	None		N/A
2001	NNW	None		
2002	NNW	None		N/A
2001	NW	310.5	5874	Cow/Goat
2002	NW	310.5	5874	0
2001	WNW	301.0	3672	Goat
2002	WNW	301.0	3672	0
2001	W	None		
2002	W	None		N/A
2001	WSW	None		
2002	WSW	None		N/A
2001	SW	None		
2002	SW	None		N/A
2001	SSW	None		
2002	SSW	None		N/A
2001	S	None		
2002	S	None		N/A
	ESE - SSE	Lake Erie		N/A

2002 LAND USE CENSUS

Closest Meat Locations

Table 12

Year	Sector	Azimuth (degrees)	Distance (meters)	Change (meters)
2001	NE	None		
2002	NE	None		N/A
2001	NNE	None		
2002	NNE	None		N/A
2001	N	1.1	2899	Beef
2002	N	1.1	2899	0
2001	NNW	None		
2002	NNW	None		N/A
2001	NW	319.5	5225	Sheep
2002	NW	319.5	5225	0
2001	WNW	285.6	2602	Beef
2002	WNW	285.6	2602	0
2001	W	None		
2002	W	None		N/A
2001	WSW	248.5	4606	
2002	WSW	None		N/A
2001	SW	None		
2002	SW	None		N/A
2001	SSW	None		
2002	SSW	None		N/A
2001	S	None		
2002	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/294°	0.6 mi.	On Site fence at south end of N. Bullit 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/252°	1.4 mi.	Pole, Toll Rd. - 12 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-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

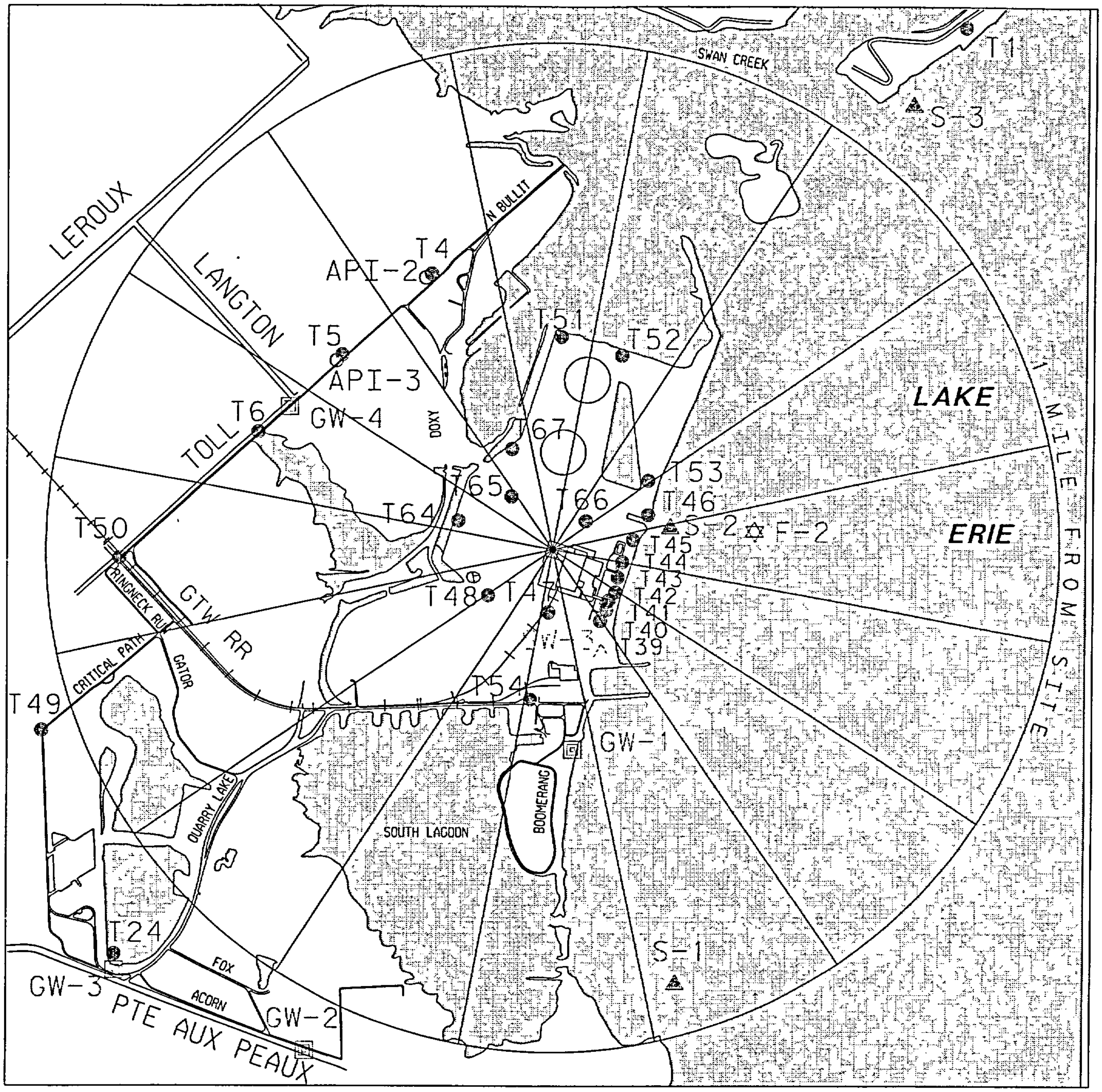
I = Indicator *C = Control* *SA = Semiannually*

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*



MAP - 1
SAMPLING LOCATIONS
BY STATION NUMBER
WITHIN 1 MILE

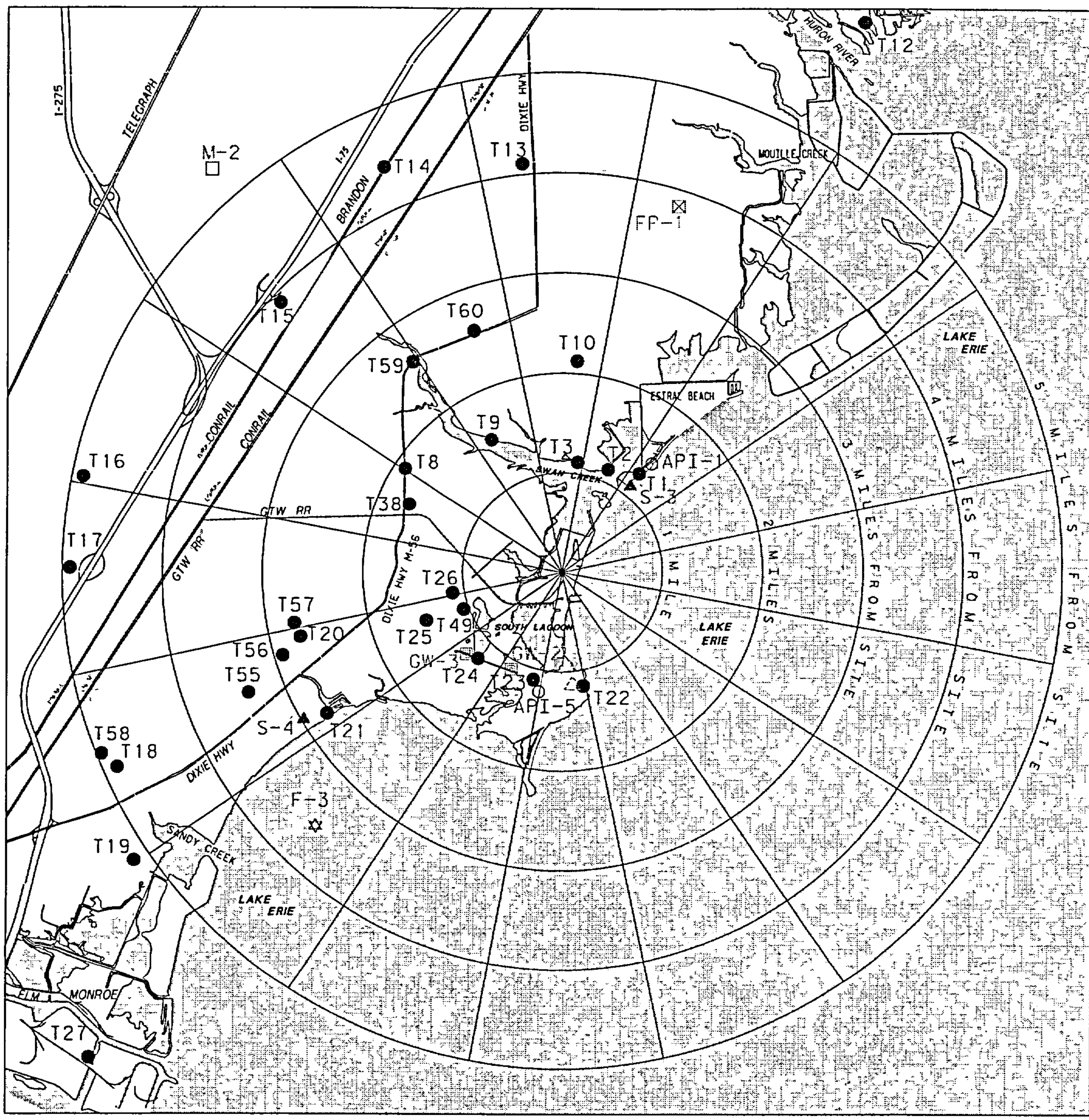
N

LEGEND

- T- DIRECT RADIATION
- API- AIR PARTICULATES/AIR IODINE
- S- SEDIMENTS
- DW/SW- DRINKING WATER/SURFACE WATER
- GW- GROUND WATER
- M- MILK
- FP- FOOD PRODUCTS
- F- FISH

0 0.5

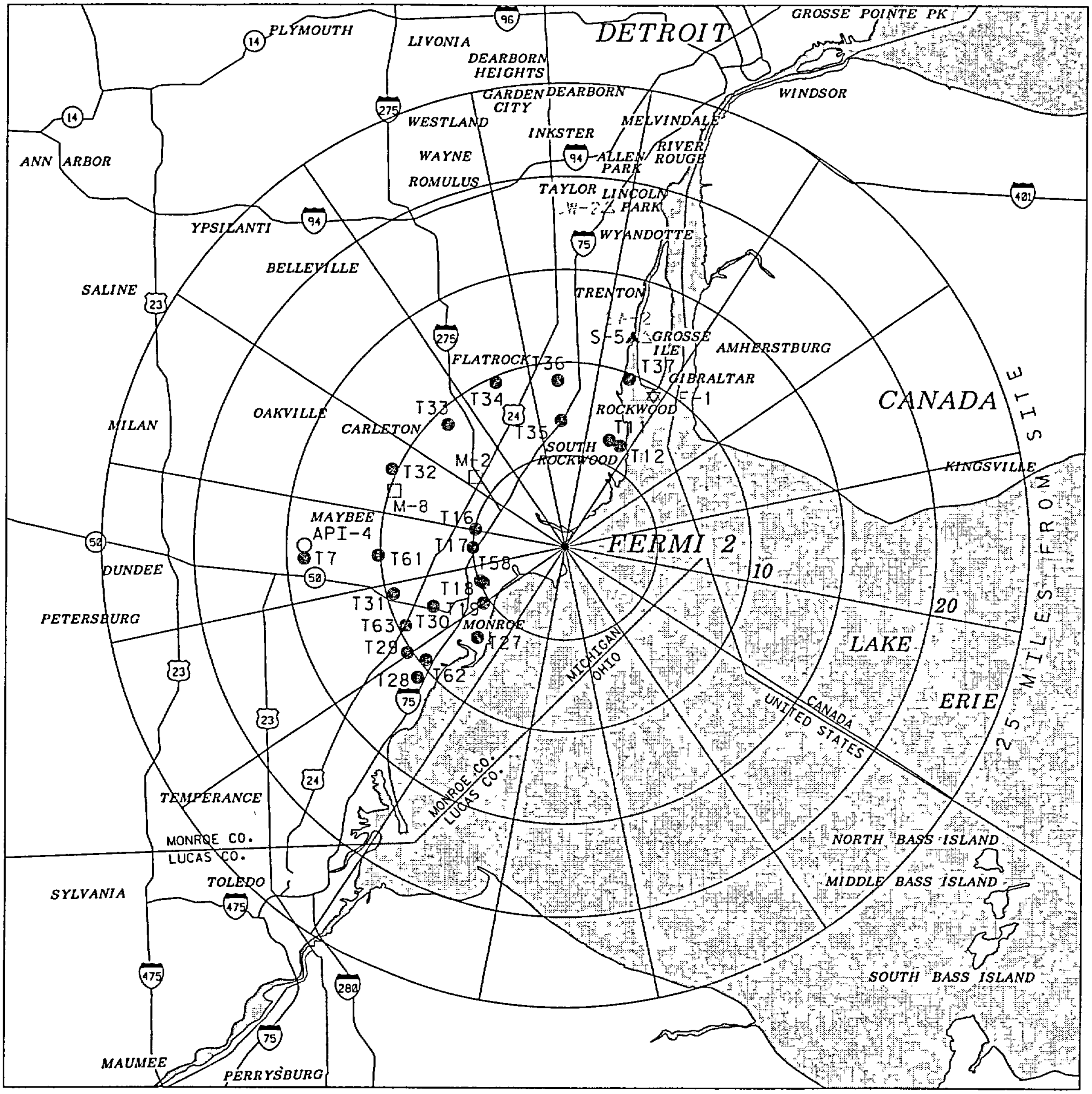
SCALE IN MILES



MAP - 2
SAMPLING LOCATIONS
BY STATION NUMBER
(1 To 5 MILES)

LEGEND

- T- DIRECT RADIATION
- API- AIR PARTICULATES/AIR IODINE
- S- SEDIMENTS
- DW/SW- DRINKING WATER/SURFACE WATER
- GW- GROUND WATER
- M- MILK
- FP- FOOD PRODUCTS
- F- FISH



MAP - 3
SAMPLING LOCATIONS
BY STATION NUMBER
(GREATER THAN 5 MILES)

LEGEND

- ● T- DIRECT RADIATION
- ○ API- AIR PARTICULATES OR AIR IODINE
- ▲ S- SEDIMENTS
- △ DW/SW- DRINKING WATER/SURFACE WATER
- ▣ GW- GROUND WATER
- □ M- MILK
- □ FP- FOOD PRODUCTS
- ✡ F- FISH

N

5 0 5 10

SCALE IN MILES

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 2002
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) 193	1.0	13.8 (177/177) 9.1 to 21.8	T-49 (Indicator)	18.7 (4/4) 16.6 to 21.8	13.3 (16/16) 11.6 to 17.5	None
Airborne Particulates *pCi/cu. m.*	Gross Beta 248	1.00E-2	2.63E-2 (197/197) 1.02E-2 to 4.86E-2	API-5 (Indicator)	2.76E-2 (48/48) 1.31E-2 to 4.77E-2	2.61E-2 (51/51) 9.70E-3 to 4.88E-2	None
	Gamma Spec. 20						
	Be-7	N/A	8.81E-2 (12/16) 4.90E-2 to 1.13E-1	API-5 (Indicator)	1.03E-1 (4/4) 9.80E-2 to 1.10E-1	9.08E-2 (4/4) 7.30E-2 to 1.33E-1	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
	La-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
Airborne Iodine *pCi/cu. m.*	I-131 246	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 2002
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	1.95E+0 (6/18) 1.70E+0 to 2.34E+0	M-8 (Control)	2.33E+0 (2/18) 2.13E+0 to 2.53E+0	2.33E+0 (2/18) 2.13E+0 to 2.53E+0	None
	Gamma Spec. 36						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	1.38E+3 (18/18) 1.24E+3 to 1.51E+3	M-8 (Control)	1.41E+3 (18/18) 1.28E+3 to 1.53E+3	1.41E+3 (18/18) 1.28E+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
	La-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	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	4.21E+3 (6/6) 2.44E+3 to 5.37E+3	FP-9 (Control)	6.44E+3 (3/3) 5.46E+3 to 7.68E+3	6.44E+3 (3/3) 5.46E+3 to 7.68E+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 2002
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	N/A	<MDA			<MDA	None
	La-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
Drinking Water *pCi/l*	Gross Beta 24	4.00E+0	5.56E+0 (11/12) 3.05E+0 to 1.06E+1	DW-1 (Indicator)	5.56E+0 (11/12) 3.05E+0 to 1.06E+1	4.44E+0 (10/12) 2.46E+0 to 8.80E+0	None
	Sr-89 24	N/A	<MDA			<MDA	None
	Sr-90	N/A	<MDA			<MDA	None
	Gamma Spec. 24						
	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 2002
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
	La-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
	H-3 8	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
	La-140	1.50E+1	<MDA			<MDA	None
	Ce-141	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 2002
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*	Ce-144	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
	La-140	1.50E+1	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	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	<MDA			<MDA	None
	Gamma Spec. 10						
	Be-7	N/A	<MDA	S-5 (Control)	5.95E+2 (2/2)	5.95E+2 (2/2)	None
					5.20E+2 to 6.70E+2	5.20E+2 to 6.70E+2	
	K-40	N/A	1.16E+4 (8/8)	S-2 (Indicator)	1.50E+4 (2/2)	1.14E+4 (2/2)	
			9.02E+3 to 1.73E+4		1.27E+4 to 1.73E+4	1.07E+4 to 1.21E+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 2002
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	S-5 (Control)	8.20E+1 (2/2) 5.50E+1 to 1.09E+2	8.20E+1 (2/2) 5.50E+1 to 1.09E+2	None
	Ba-140	N/A	<MDA			<MDA	None
	La-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	N/A	<MDA			<MDA	None
Fish	Sr-89 31	N/A	<MDA			<MDA	None
pCi/kg wet	Sr-90	N/A	<MDA			<MDA	None
	Gamma Spec. 31						
	Be-7	N/A	<MDA			<MDA	None
	K-40	N/A	3.00E+3 (11/11) 1.62E+3 to 4.10E+3	F-3 (Control)	3.29E+3 (8/8) 1.96E+3 to 4.71E+3	3.15E+3 (19/19) 1.96E+3 to 4.71E+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 2002
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
	La-140	N/A	<MDA			<MDA	None
	Ce-141	N/A	<MDA			<MDA	None
	Ce-144	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	10.87	11.44	11.76	14.36
T-2	13.49	15.10	14.76	18.05
T-3	9 07	9.89	9.39	12.74
T-4	11.67	12.44	14.23	16.59
T-5	12.89	13.77	14.42	17.16
T-6	13.21	13.06	13.28	17.17
T-7	11.60	11.58	11.84	14.64
T-8	13.46	13.92	14.76	17.27
T-9	12.51	13.32	12.53	16.83
T-10	12.64	12.61	13.30	16.92
T-11	10.92	(a)	11.72	14.70
T-12	10.84	10.52	11.07	15.05
T-13	12.82	13.57	14.66	17.91
T-14	13.27	13.88	14.35	17.84
T-15	10.97	11.23	11.38	14.99
T-16	14.89	15.13	15.36	19.78
T-17	10.84	12.68	11.02	14.57
T-18	11.84	12.20	12.13	15.91
T-19	12.29	13.03	13.71	18.48
T-20	14.09	15.13	16.23	20.17
T-21	11.00	11.06	11.01	14.86
T-22	12.19	11.82	12.54	15.88
T-23	11.64	13.16	11.98	16.06
T-24	10.89	11.19	10.66	14.98
T-25	15.62	15.65	16.62	19.36
T-26	14.49	15.17	15.86	19.60
T-27	9.75	10.09	9.70	13.45
T-28	12.36	12.98	12.53	17.46
T-29	13.14	12.21	12.77	17.10
T-30	12.59	13.33	(a)	16.60
T-31	11.77	12.28	12.76	15.68
T-32	12.46	13.67	13.76	16.51
T-33	10.55	11.33	11.05	15.04
T-34	11.08	14.06	11.41	15.21
T-35	11.45	11.69	11.63	15.72
T-36	12.52	13.12	12.76	16.81
T-37	12.27	12.64	12.71	16.73
T-38	13.32	13.52	14.20	17.69
T-39	40.14	53.86	53.94	65.32
T-40	34.27	45.43	46.66	47.40
T-41	62.40	82.50	84.08	90.62
T-42	60.19	86.52	81.42	93.26
T-43	63.61	84.34	88.49	103.30
T-44	57.67	75.51	50.87	87.87
T-45	36.67	49.31	50.87	57.03
T-46	28.42	35.54	37.49	39.19
T-47	67.45	68.35	73.90	82.93

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

STATION NUMBER	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
T-48	30.95	36.53	41.06	45.06
T-49	17.15	16.64	19.19	21.78
T-50	13.66	13.02	13.64	16.94
T-51	10.15	9.95	9.25	14.19
T-52	12.96	13.03	12.64	17.93
T-53	19.21	22.63	22.66	26.55
T-54	14.35	15.27	15.06	18.64
T-55	12.70	12.73	13.43	(a)
T-56	12.57	12.41	12.37	17.11
T-57	15.64	14.48	15.69	19.55
T-58	11.78	11.86	11.66	15.34
T-59	12.05	11.06	11.49	15.10
T-60	13.43	13.23	13.75	16.43
T-61	14.06	13.43	14.95	17.95
T-62	14.22	13.53	15.94	20.74
T-63	11.26	11.03	13.47	14.94
T-64	17.94	19.99	20.99	24.21
T-65	19.72	22.35	23.45	26.79
T-66	99.63	117.71	124.66	135.76
T-67	14.87	15.70	16.44	20.29

(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		
1/2/2002	1/8/2002	4.46E-02	+/-	3.40E-03
1/8/2002	1/15/2002	2.53E-02	+/-	2.50E-03
1/15/2002	1/22/2002	2.94E-02	+/-	2.70E-03
1/22/2002	1/29/2002	2.18E-02	+/-	2.50E-03
1/29/2002	2/5/2002	(a)		
2/5/2002	2/12/2002	4.26E-02	+/-	2.20E-03
2/12/2002	2/19/2002	2.00E-02	+/-	2.20E-03
2/19/2002	2/26/2002	1.51E-02	+/-	2.50E-03
2/26/2002	3/5/2002	1.76E-02	+/-	2.10E-03
3/5/2002	3/12/2002	3.09E-02	+/-	2.30E-03
3/12/2002	3/20/2002	2.69E-02	+/-	2.20E-03
3/20/2002	3/26/2002	2.82E-02	+/-	2.50E-03
3/26/2002	4/2/2002	2.22E-02	+/-	2.40E-03

API-1 SECOND QUARTER

Start Date	End Date	Activity		
4/2/2002	4/9/2002	1.76E-02	+/-	2.10E-03
4/9/2002	4/16/2002	1.66E-02	+/-	2.20E-03
4/16/2002	4/23/2002	2.04E-02	+/-	2.20E-03
4/23/2002	4/30/2002	1.87E-02	+/-	2.20E-03
4/30/2002	5/7/2002	1.71E-02	+/-	2.10E-03
5/7/2002	5/14/2002	1.90E-02	+/-	2.40E-03
5/14/2002	5/22/2002	1.02E-02	+/-	2.10E-03
5/22/2002	5/28/2002	1.88E-02	+/-	2.50E-03
5/28/2002	6/4/2002	1.91E-02	+/-	2.20E-03
6/4/2002	6/11/2002	2.10E-02	+/-	1.80E-03
6/11/2002	6/18/2002	1.45E-02	+/-	1.80E-03
6/18/2002	6/25/2002	2.36E-02	+/-	3.20E-03
6/26/2002	7/2/2002	(a)		

(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		
7/2/2002	7/9/2002	(a)		
7/16/2002	7/23/2002	3.21E-02	+/-	2.10E-03
7/23/2002	7/30/2002	1.89E-02	+/-	2.00E-03
7/30/2002	8/6/2002	2.05E-02	+/-	2.20E-03
8/6/2002	8/13/2002	2.12E-02	+/-	2.30E-03
8/13/2002	8/20/2002	1.80E-02	+/-	2.50E-03
8/20/2002	8/27/2002	1.93E-02	+/-	2.40E-03
8/27/2002	9/3/2002	1.86E-02	+/-	2.30E-03
9/3/2002	9/10/2002	2.88E-02	+/-	2.40E-03
9/10/2002	9/17/2002	3.20E-02	+/-	2.70E-03
9/17/2002	9/24/2002	2.76E-02	+/-	2.50E-03
9/24/2002	10/1/2002	3.59E-02	+/-	2.80E-03

API-1 FOURTH QUARTER

Start Date	End Date	Activity		
10/1/2002	10/8/2002	1.87E-02	+/-	2.50E-03
10/8/2002	10/15/2002	3.56E-02	+/-	2.70E-03
10/15/2002	10/22/2002	1.54E-02	+/-	2.60E-03
10/22/2002	10/30/2002	1.54E-02	+/-	2.60E-03
10/30/2002	11/5/2002	3.16E-02	+/-	3.10E-03
11/5/2002	11/12/2002	4.18E-02	+/-	2.60E-03
11/12/2002	11/19/2002	2.59E-02	+/-	2.20E-03
11/19/2002	11/26/2002	1.97E-02	+/-	2.00E-03
11/26/2002	12/3/2002	1.90E-02	+/-	2.20E-03
12/3/2002	12/10/2002	4.32E-02	+/-	2.50E-03
12/10/2002	12/17/2002	3.96E-02	+/-	2.70E-03
12/17/2002	12/23/2002	2.80E-02	+/-	2.50E-03
12/23/2002	12/30/2002	3.77E-02	+/-	2.60E-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		
1/2/2002	1/8/2002	3.23E-02	+/-	3.70E-03
1/8/2002	1/15/2002	2.01E-02	+/-	2.70E-03
1/15/2002	1/22/2002	2.46E-02	+/-	2.80E-03
1/22/2002	1/29/2002	2.27E-02	+/-	2.90E-03
1/29/2002	2/6/2002	2.69E-02	+/-	2.10E-03
2/6/2002	2/12/2002	3.70E-02	+/-	3.00E-03
2/12/2002	2/19/2002	2.11E-02	+/-	2.60E-03
2/19/2002	2/26/2002	1.22E-02	+/-	2.20E-03
2/26/2002	3/5/2002	1.98E-02	+/-	2.40E-03
3/5/2002	3/12/2002	3.26E-02	+/-	2.60E-03
3/12/2002	3/20/2002	2.46E-02	+/-	2.40E-03
3/20/2002	3/26/2002	2.76E-02	+/-	2.70E-03
3/26/2002	4/2/2002	2.41E-02	+/-	2.80E-03

API-2 SECOND QUARTER

Start Date	End Date	Activity		
4/2/2002	4/10/2002	1.72E-02	+/-	2.20E-03
4/10/2002	4/16/2002	1.70E-02	+/-	2.40E-03
4/16/2002	4/23/2002	2.35E-02	+/-	2.10E-03
4/23/2002	4/30/2002	2.06E-02	+/-	2.00E-03
4/30/2002	5/7/2002	2.08E-02	+/-	2.20E-03
5/7/2002	5/14/2002	1.72E-02	+/-	2.30E-03
5/14/2002	5/22/2002	1.15E-02	+/-	1.90E-03
5/22/2002	5/28/2002	1.37E-02	+/-	2.20E-03
5/28/2002	6/4/2002	2.26E-02	+/-	2.10E-03
6/4/2002	6/11/2002	2.37E-02	+/-	2.20E-03
6/11/2002	6/18/2002	1.74E-02	+/-	2.00E-03
6/18/2002	6/25/2002	3.93E-02	+/-	2.50E-03
6/25/2002	7/2/2002	2.90E-02	+/-	2.30E-03

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

API-2 THIRD QUARTER

Start Date	End Date	Activity		
7/2/2002	7/9/2002	2.70E-02	+/-	2.50E-03
7/9/2002	7/16/2002	2.47E-02	+/-	2.20E-03
7/16/2002	7/23/2002	3.81E-02	+/-	2.40E-03
7/23/2002	7/30/2002	2.29E-02	+/-	2.10E-03
7/30/2002	8/6/2002	3.04E-02	+/-	2.60E-03
8/6/2002	8/13/2002	3.12E-02	+/-	2.30E-03
8/13/2002	8/20/2002	2.19E-02	+/-	2.40E-03
8/20/2002	8/27/2002	2.15E-02	+/-	2.20E-03
8/27/2002	9/3/2002	2.42E-02	+/-	2.20E-03
9/3/2002	9/10/2002	3.23E-02	+/-	2.40E-03
9/10/2002	9/17/2002	3.64E-02	+/-	2.70E-03
9/17/2002	9/24/2002	3.13E-02	+/-	2.40E-03
9/24/2002	10/1/2002	3.22E-02	+/-	2.60E-03

API-2 FOURTH QUARTER

Start Date	End Date	Activity		
10/1/2002	10/8/2002	2.18E-02	+/-	2.50E-03
10/8/2002	10/15/2002	4.64E-02	+/-	3.10E-03
10/15/2002	10/22/2002	1.95E-02	+/-	2.70E-03
10/22/2002	10/30/2002	2.17E-02	+/-	2.40E-03
10/30/2002	11/5/2002	3.37E-02	+/-	3.20E-03
11/5/2002	11/12/2002	4.55E-02	+/-	2.90E-03
11/12/2002	11/19/2002	2.64E-02	+/-	2.60E-03
11/19/2002	11/26/2002	2.76E-02	+/-	2.40E-03
11/26/2002	12/3/2002	2.10E-02	+/-	2.50E-03
12/3/2002	12/10/2002	3.82E-02	+/-	2.80E-03
12/10/2002	12/17/2002	4.02E-02	+/-	3.10E-03
12/17/2002	12/23/2002	3.35E-02	+/-	3.00E-03
12/23/2002	12/30/2002	3.66E-02	+/-	3.00E-03

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

API-3 FIRST QUARTER

Start Date	End Date	Activity		
1/2/2002	1/8/2002	4.42E-02	+/-	4.20E-03
1/8/2002	1/15/2002	2.79E-02	+/-	3.10E-03
1/15/2002	1/22/2002	2.83E-02	+/-	3.40E-03
1/22/2002	1/29/2002	1.93E-02	+/-	3.00E-03
1/29/2002	2/6/2002	2.27E-02	+/-	2.50E-03
2/6/2002	2/12/2002	3.43E-02	+/-	3.10E-03
2/12/2002	2/19/2002	2.17E-02	+/-	2.60E-03
2/19/2002	2/26/2002	1.60E-02	+/-	2.30E-03
2/26/2002	3/5/2002	1.78E-02	+/-	2.00E-03
3/5/2002	3/12/2002	2.52E-02	+/-	2.30E-03
3/12/2002	3/21/2002	2.12E-02	+/-	8.90E-03
3/21/2002	3/26/2002	(a)		
3/26/2002	3/29/2002	2.54E-02	+/-	6.60E-03

API-3 SECOND QUARTER

Start Date	End Date	Activity		
4/2/2002	4/10/2002	1.76E-02	+/-	2.00E-03
4/10/2002	4/16/2002	1.38E-02	+/-	2.70E-03
4/16/2002	4/23/2002	1.87E-02	+/-	2.30E-03
4/23/2002	4/30/2002	1.86E-02	+/-	2.10E-03
4/30/2002	5/7/2002	1.78E-02	+/-	2.10E-03
5/7/2002	5/14/2002	1.66E-02	+/-	2.30E-03
5/14/2002	5/22/2002	1.02E-02	+/-	2.00E-03
5/22/2002	5/28/2002	1.42E-02	+/-	2.30E-03
5/28/2002	6/4/2002	1.98E-02	+/-	2.10E-03
6/4/2002	6/11/2002	(a)		
6/11/2002	6/18/2002	1.58E-02	+/-	1.90E-03
6/18/2002	6/25/2002	4.65E-02	+/-	3.50E-03
6/25/2002	7/2/2002	2.36E-02	+/-	1.80E-03

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

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

API-3 THIRD QUARTER

Start Date	End Date	Activity		
7/2/2002	7/9/2002	2.35E-02	+/-	2.30E-03
7/9/2002	7/16/2002	2.15E-02	+/-	2.20E-03
7/16/2002	7/23/2002	3.59E-02	+/-	2.40E-03
7/23/2002	7/30/2002	2.11E-02	+/-	2.20E-03
7/30/2002	8/6/2002	2.63E-02	+/-	2.60E-03
8/6/2002	8/13/2002	2.39E-02	+/-	2.20E-03
8/13/2002	8/20/2002	2.42E-02	+/-	2.50E-03
8/20/2002	8/27/2002	2.54E-02	+/-	2.40E-03
8/27/2002	9/3/2002	2.66E-02	+/-	2.30E-03
9/3/2002	9/10/2002	3.71E-02	+/-	2.50E-03
9/10/2002	9/17/2002	3.72E-02	+/-	2.80E-03
9/17/2002	9/24/2002	3.10E-02	+/-	2.40E-03
9/24/2002	10/1/2002	3.38E-02	+/-	2.70E-03

API-3 FOURTH QUARTER

Start Date	End Date	Activity		
10/1/2002	10/8/2002	2.54E-02	+/-	2.90E-03
10/8/2002	10/15/2002	4.34E-02	+/-	3.00E-03
10/15/2002	10/22/2002	2.19E-02	+/-	2.70E-03
10/22/2002	10/30/2002	2.12E-02	+/-	2.30E-03
10/30/2002	11/5/2002	3.54E-02	+/-	3.20E-03
11/5/2002	11/13/2002	4.86E-02	+/-	3.20E-03
11/13/2002	11/19/2002	(a)		
11/19/2002	11/26/2002	2.48E-02	+/-	3.10E-03
11/26/2002	12/3/2002	1.58E-02	+/-	2.70E-03
12/3/2002	12/10/2002	4.02E-02	+/-	2.80E-03
12/10/2002	12/17/2002	4.26E-02	+/-	3.10E-03
12/17/2002	12/23/2002	2.54E-02	+/-	2.80E-03
12/23/2002	12/30/2002	3.53E-02	+/-	3.00E-03

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

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

API-4 FIRST QUARTER

Start Date	End Date	Activity		
1/2/2002	1/8/2002	4.10E-02	+/-	3.90E-03
1/8/2002	1/15/2002	2.27E-02	+/-	2.90E-03
1/15/2002	1/22/2002	2.88E-02	+/-	3.20E-03
1/22/2002	1/29/2002	2.11E-02	+/-	2.90E-03
1/29/2002	2/5/2002	2.32E-02	+/-	2.80E-03
2/5/2002	2/12/2002	3.38E-02	+/-	2.40E-03
2/12/2002	2/19/2002	2.50E-02	+/-	2.40E-03
2/19/2002	2/26/2002	1.65E-02	+/-	2.00E-03
2/26/2002	3/5/2002	2.18E-02	+/-	2.20E-03
3/5/2002	3/12/2002	3.33E-02	+/-	2.40E-03
3/12/2002	3/20/2002	2.72E-02	+/-	2.20E-03
3/20/2002	3/26/2002	2.91E-02	+/-	2.60E-03
3/26/2002	4/2/2002	2.38E-02	+/-	2.50E-03

API-4 SECOND QUARTER

Start Date	End Date	Activity		
4/2/2002	4/9/2002	1.51E-02	+/-	2.10E-03
4/9/2002	4/16/2002	2.05E-02	+/-	2.40E-03
4/16/2002	4/23/2002	1.95E-02	+/-	2.30E-03
4/23/2002	4/30/2002	1.56E-02	+/-	2.20E-03
4/30/2002	5/7/2002	1.75E-02	+/-	2.30E-03
5/7/2002	5/14/2002	1.79E-02	+/-	2.50E-03
5/14/2002	5/22/2002	9.70E-03	+/-	2.20E-03
5/22/2002	5/28/2002	1.85E-02	+/-	2.60E-03
5/28/2002	6/4/2002	2.47E-02	+/-	2.40E-03
6/4/2002	6/11/2002	2.51E-02	+/-	2.40E-03
6/11/2002	6/18/2002	1.61E-02	+/-	1.90E-03
6/18/2002	6/25/2002	4.19E-02	+/-	2.40E-03
6/25/2002	7/2/2002	2.49E-02	+/-	2.20E-03

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

API-4 THIRD QUARTER

Start Date	End Date	Activity		
7/2/2002	7/9/2002	2.38E-02	+/-	2.60E-03
7/9/2002	7/16/2002	2.15E-02	+/-	1.90E-03
7/16/2002	7/23/2002	4.00E-02	+/-	2.20E-03
7/23/2002	7/30/2002	1.85E-02	+/-	1.90E-03
7/30/2002	8/6/2002	2.58E-02	+/-	2.60E-03
8/6/2002	8/13/2002	2.88E-02	+/-	2.40E-03
8/13/2002	8/20/2002	2.36E-02	+/-	2.40E-03
8/20/2002	8/27/2002	2.87E-02	+/-	2.30E-03
8/27/2002	9/3/2002	2.36E-02	+/-	2.30E-03
9/3/2002	9/10/2002	3.41E-02	+/-	2.50E-03
9/10/2002	9/17/2002	3.36E-02	+/-	2.70E-03
9/17/2002	9/24/2002	3.09E-02	+/-	2.40E-03
9/24/2002	10/1/2002	3.22E-02	+/-	2.70E-03

API-4 FOURTH QUARTER

Start Date	End Date	Activity		
10/1/2002	10/8/2002	2.50E-02	+/-	2.50E-03
10/8/2002	10/15/2002	3.84E-02	+/-	2.60E-03
10/15/2002	10/22/2002	2.19E-02	+/-	2.60E-03
10/22/2002	10/30/2002	2.23E-02	+/-	2.20E-03
10/30/2002	11/5/2002	4.88E-02	+/-	3.30E-03
11/5/2002	11/12/2002	4.18E-02	+/-	2.90E-03
11/12/2002	11/19/2002	2.41E-02	+/-	2.40E-03
11/19/2002	11/26/2002	2.51E-02	+/-	2.30E-03
11/26/2002	12/3/2002	1.30E-02	+/-	2.30E-03
12/3/2002	12/10/2002	3.84E-02	+/-	2.40E-03
12/10/2002	12/17/2002	(a)		
12/17/2002	12/23/2002	1.88E-02	+/-	4.00E-03
12/23/2002	12/30/2002	3.19E-02	+/-	2.90E-03

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

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

API-5 FIRST QUARTER

Start Date	End Date	Activity		
1/2/2002	1/8/2002	4.37E-02	+/-	4.00E-03
1/8/2002	1/15/2002	2.50E-02	+/-	2.90E-03
1/15/2002	1/22/2002	3.22E-02	+/-	3.20E-03
1/22/2002	1/29/2002	2.42E-02	+/-	2.90E-03
1/29/2002	2/5/2002	2.02E-02	+/-	2.20E-03
2/5/2002	2/12/2002	3.17E-02	+/-	2.60E-03
2/12/2002	2/19/2002	1.98E-02	+/-	2.90E-03
2/19/2002	2/26/2002	1.72E-02	+/-	2.50E-03
2/26/2002	3/5/2002	2.02E-02	+/-	2.40E-03
3/5/2002	3/12/2002	2.80E-02	+/-	2.50E-03
3/12/2002	3/20/2002	2.47E-02	+/-	2.40E-03
3/20/2002	3/26/2002	3.10E-02	+/-	2.80E-03
3/26/2002	4/2/2002	2.16E-02	+/-	2.60E-03

API-5 SECOND QUARTER

Start Date	End Date	Activity		
4/2/2002	4/9/2002	1.53E-02	+/-	2.30E-03
4/9/2002	4/16/2002	1.31E-02	+/-	2.30E-03
4/16/2002	4/23/2002	1.80E-02	+/-	2.10E-03
4/23/2002	4/30/2002	2.04E-02	+/-	2.80E-03
4/30/2002	5/7/2002	1.82E-02	+/-	2.90E-03
5/7/2002	5/14/2002	1.67E-02	+/-	4.00E-03
5/14/2002	5/22/2002	(a)		
5/22/2002	5/28/2002	1.75E-02	+/-	4.50E-03
5/28/2002	6/4/2002	2.21E-02	+/-	2.20E-03
6/4/2002	6/11/2002	2.45E-02	+/-	2.30E-03
6/11/2002	6/18/2002	1.33E-02	+/-	2.00E-03
6/18/2002	6/25/2002	4.01E-02	+/-	2.50E-03
6/25/2002	7/2/2002	(a)		

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

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

API-5 THIRD QUARTER

Start Date	End Date	Activity		
7/2/2002	7/9/2002	(a)		
7/9/2002	7/16/2002	(a)		
7/16/2002	7/23/2002	3.90E-02	+/-	2.70E-03
7/23/2002	7/30/2002	2.25E-02	+/-	2.30E-03
7/30/2002	8/6/2002	2.59E-02	+/-	2.90E-03
8/6/2002	8/13/2002	3.09E-02	+/-	2.70E-03
8/13/2002	8/20/2002	2.06E-02	+/-	2.60E-03
8/20/2002	8/27/2002	2.46E-02	+/-	2.60E-03
8/27/2002	9/3/2002	2.61E-02	+/-	2.60E-03
9/3/2002	9/10/2002	3.82E-02	+/-	2.80E-03
9/10/2002	9/17/2002	3.52E-02	+/-	3.10E-03
9/17/2002	9/24/2002	3.05E-02	+/-	2.60E-03
9/24/2002	10/1/2002	4.31E-02	+/-	3.10E-03

API-5 FOURTH QUARTER

Start Date	End Date	Activity		
10/1/2002	10/8/2002	2.77E-02	+/-	2.80E-03
10/8/2002	10/15/2002	4.77E-02	+/-	3.00E-03
10/15/2002	10/22/2002	2.26E-02	+/-	3.00E-03
10/22/2002	10/30/2002	2.24E-02	+/-	2.60E-03
10/30/2002	11/5/2002	3.99E-02	+/-	3.50E-03
11/5/2002	11/12/2002	4.54E-02	+/-	2.60E-03
11/12/2002	11/19/2002	2.48E-02	+/-	2.10E-03
11/19/2002	11/26/2002	2.66E-02	+/-	2.10E-03
11/26/2002	12/3/2002	2.05E-02	+/-	2.10E-03
12/3/2002	12/10/2002	4.05E-02	+/-	2.50E-03
12/10/2002	12/17/2002	4.05E-02	+/-	2.70E-03
12/17/2002	12/23/2002	3.15E-02	+/-	2.60E-03
12/23/2002	12/30/2002	3.74E-02	+/-	2.70E-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	
1/2/2002	1/8/2002	<	5.00E-02
1/8/2002	1/15/2002	<	3.50E-02
1/15/2002	1/22/2002	<	4.50E-02
1/22/2002	1/29/2002	<	3.50E-02
1/29/2002	2/5/2002		(a)
2/5/2002	2/12/2002	<	2.20E-02
2/12/2002	2/19/2002	<	2.80E-02
2/19/2002	2/26/2002	<	3.30E-02
2/26/2002	3/5/2002	<	3.40E-02
3/5/2002	3/12/2002	<	4.10E-02
3/12/2002	3/20/2002	<	4.10E-02
3/20/2002	3/26/2002	<	3.50E-02
3/26/2002	4/2/2002	<	3.10E-02

API-1 SECOND QUARTER

Start Date	End Date	Activity	
4/2/2002	4/9/2002	<	5.30E-02
4/9/2002	4/16/2002	<	3.10E-02
4/16/2002	4/23/2002	<	6.30E-02
4/23/2002	4/30/2002	<	4.40E-02
4/30/2002	5/7/2002	<	3.50E-02
5/7/2002	5/14/2002	<	3.40E-02
5/14/2002	5/22/2002	<	5.00E-02
5/22/2002	5/28/2002	<	4.00E-02
5/28/2002	6/4/2002	<	3.70E-02
6/4/2002	6/11/2002	<	5.50E-02
6/11/2002	6/18/2002	<	3.50E-02
6/18/2002	6/25/2002	<	5.10E-02
6/25/2002	7/2/2002		(a)

(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	
7/2/2002	7/9/2002		(a)
7/16/2002	7/23/2002	<	3.50E-02
7/23/2002	7/30/2002	<	4.20E-02
7/30/2002	8/6/2002	<	3.90E-02
8/6/2002	8/13/2002	<	4.80E-02
8/13/2002	8/20/2002	<	3.20E-02
8/20/2002	8/27/2002	<	2.60E-02
8/27/2002	9/3/2002	<	4.60E-02
9/3/2002	9/10/2002	<	4.50E-02
9/10/2002	9/17/2002	<	5.70E-02
9/17/2002	9/24/2002	<	4.80E-02
9/24/2002	10/1/2002	<	3.60E-02

API-1 FOURTH QUARTER

Start Date	End Date	Activity	
10/1/2002	10/8/2002	<	4.20E-02
10/8/2002	10/15/2002	<	5.00E-02
10/15/2002	10/22/2002	<	2.80E-02
10/22/2002	10/30/2002	<	6.90E-02
10/30/2002	11/5/2002	<	4.60E-02
11/5/2002	11/12/2002	<	2.30E-02
11/19/2002	11/26/2002	<	2.50E-02
11/26/2002	12/3/2002	<	4.70E-02
12/3/2002	12/10/2002	<	4.40E-02
12/10/2002	12/17/2002	<	4.50E-02
12/17/2002	12/23/2002	<	2.80E-02
12/23/2002	12/30/2002	<	2.90E-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	
1/2/2002	1/8/2002	<	5.70E-02
1/8/2002	1/15/2002	<	3.20E-02
1/15/2002	1/22/2002	<	3.80E-02
1/22/2002	1/29/2002	<	4.20E-02
1/29/2002	2/6/2002	<	3.70E-02
2/6/2002	2/12/2002	<	3.50E-02
2/12/2002	2/19/2002	<	3.50E-02
2/19/2002	2/26/2002	<	2.90E-02
2/26/2002	3/5/2002	<	3.30E-02
3/5/2002	3/12/2002	<	4.40E-02
3/12/2002	3/20/2002	<	3.70E-02
3/20/2002	3/26/2002	<	3.60E-02
3/26/2002	4/2/2002	<	3.70E-02

API-2 SECOND QUARTER

Start Date	End Date	Activity	
4/2/2002	4/10/2002	<	5.80E-02
4/10/2002	4/16/2002	<	3.40E-02
4/16/2002	4/23/2002	<	4.90E-02
4/23/2002	4/30/2002	<	3.10E-02
4/30/2002	5/7/2002	<	3.60E-02
5/7/2002	5/14/2002	<	3.20E-02
5/14/2002	5/22/2002	<	4.70E-02
5/22/2002	5/28/2002	<	4.10E-02
5/28/2002	6/4/2002	<	3.50E-02
6/4/2002	6/11/2002	<	3.70E-02
6/11/2002	6/18/2002	<	4.20E-02
6/18/2002	6/25/2002	<	3.90E-02
6/25/2002	7/2/2002	<	4.20E-02

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

API-2 THIRD QUARTER

Start Date	End Date	Activity	
7/2/2002	7/9/2002	<	4.20E-02
7/9/2002	7/16/2002	<	3.00E-02
7/16/2002	7/23/2002	<	3.90E-02
7/23/2002	7/30/2002	<	4.50E-02
7/30/2002	8/6/2002	<	3.50E-02
8/6/2002	8/13/2002	<	4.60E-02
8/13/2002	8/20/2002	<	3.30E-02
8/20/2002	8/27/2002	<	2.70E-02
8/27/2002	9/3/2002	<	3.40E-02
9/3/2002	9/10/2002	<	3.50E-02
9/10/2002	9/17/2002	<	5.60E-02
9/17/2002	9/24/2002	<	4.10E-02
9/24/2002	10/1/2002	<	3.60E-02

API-2 FOURTH QUARTER

Start Date	End Date	Activity	
10/1/2002	10/8/2002	<	3.40E-02
10/8/2002	10/15/2002	<	5.20E-02
10/15/2002	10/22/2002	<	3.20E-02
10/22/2002	10/30/2002	<	5.50E-02
10/30/2002	11/5/2002	<	4.20E-02
11/5/2002	11/12/2002	<	3.10E-02
11/12/2002	11/19/2002	<	2.50E-02
11/19/2002	11/26/2002	<	3.60E-02
11/26/2002	12/3/2002	<	5.00E-02
12/3/2002	12/10/2002	<	7.00E-02
12/10/2002	12/17/2002	<	3.50E-02
12/17/2002	12/23/2002	<	3.30E-02
12/23/2002	12/30/2002	<	3.90E-02

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

API-3 FIRST QUARTER

Start Date	End Date	Activity	
1/2/2002	1/8/2002	<	5.30E-02
1/8/2002	1/15/2002	<	3.20E-02
1/15/2002	1/22/2002	<	4.30E-02
1/22/2002	1/29/2002	<	4.30E-02
1/29/2002	2/6/2002	<	4.70E-02
2/6/2002	2/12/2002	<	3.90E-02
2/12/2002	2/19/2002	<	3.90E-02
2/19/2002	2/26/2002	<	2.80E-02
2/26/2002	3/5/2002	<	2.90E-02
3/5/2002	3/12/2002	<	3.90E-02
3/12/2002	3/21/2002	<	5.80E-02
3/21/2002	3/26/2002		(a)
3/26/2002	3/29/2002	<	6.90E-02

API-3 SECOND QUARTER

Start Date	End Date	Activity	
4/2/2002	4/10/2002	<	4.80E-02
4/10/2002	4/16/2002	<	3.30E-02
4/16/2002	4/23/2002	<	4.90E-02
4/23/2002	4/30/2002	<	3.90E-02
4/30/2002	5/7/2002	<	3.40E-02
5/7/2002	5/14/2002	<	3.50E-02
5/14/2002	5/22/2002	<	4.80E-02
5/22/2002	5/28/2002	<	4.10E-02
5/28/2002	6/4/2002	<	2.80E-02
6/4/2002	6/12/2002		(a)
6/12/2002	6/20/2002	<	3.90E-02
6/18/2002	6/25/2002	<	4.40E-02
6/25/2002	7/2/2002	<	4.10E-02

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

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

API-3 THIRD QUARTER

Start Date	End Date	Activity	
7/2/2002	7/9/2002	<	3.70E-02
7/9/2002	7/16/2002	<	3.10E-02
7/16/2002	7/23/2002	<	3.70E-02
7/23/2002	7/30/2002	<	4.50E-02
7/30/2002	8/6/2002	<	3.70E-02
8/6/2002	8/13/2002	<	5.90E-02
8/13/2002	8/20/2002	<	3.10E-02
8/20/2002	8/27/2002	<	3.40E-02
8/27/2002	9/3/2002	<	4.30E-02
9/3/2002	9/10/2002	<	4.00E-02
9/10/2002	9/17/2002	<	6.00E-02
9/17/2002	9/24/2002	<	4.10E-02
9/24/2002	10/1/2002	<	5.90E-02

API-3 FOURTH QUARTER

Start Date	End Date	Activity	
10/1/2002	10/8/2002	<	4.60E-02
10/8/2002	10/15/2002	<	6.60E-02
10/15/2002	10/22/2002	<	2.80E-02
10/22/2002	10/30/2002	<	6.60E-02
10/30/2002	11/5/2002	<	4.50E-02
11/5/2002	11/13/2002	<	3 30E-02
11/13/2002	11/19/2002		(a)
11/19/2002	11/26/2002	<	3.70E-02
11/26/2002	12/3/2002	<	5.00E-02
12/3/2002	12/10/2002	<	3.50E-02
12/10/2002	12/17/2002	<	3.90E-02
12/17/2002	12/23/2002	<	3.00E-02
12/23/2002	12/30/2002	<	4.10E-02

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

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

API-4 FIRST QUARTER

Start Date	End Date	Activity	
1/2/2002	1/8/2002	<	5.40E-02
1/8/2002	1/15/2002	<	3.00E-02
1/15/2002	1/22/2002	<	3.50E-02
1/22/2002	1/29/2002	<	3.60E-02
1/29/2002	2/5/2002	<	4.80E-02
2/5/2002	2/12/2002	<	3.20E-02
2/12/2002	2/19/2002	<	3.00E-02
2/19/2002	2/26/2002	<	2.90E-02
2/26/2002	3/5/2002	<	3.20E-02
3/5/2002	3/12/2002	<	4.30E-02
3/12/2002	3/20/2002	<	4.20E-02
3/20/2002	3/26/2002	<	3.00E-02
3/26/2002	4/2/2002	<	3.60E-02

API-4 SECOND QUARTER

Start Date	End Date	Activity	
4/2/2002	4/9/2002	<	5.80E-02
4/9/2002	4/16/2002	<	3.70E-02
4/16/2002	4/23/2002	<	5.50E-02
4/23/2002	4/30/2002	<	4.70E-02
4/30/2002	5/7/2002	<	3.90E-02
5/7/2002	5/14/2002	<	4.30E-02
5/14/2002	5/22/2002	<	5.30E-02
5/22/2002	5/28/2002	<	4.30E-02
5/28/2002	6/4/2002	<	3.30E-02
6/4/2002	6/11/2002	<	3.90E-02
6/11/2002	6/18/2002	<	4.00E-02
6/18/2002	6/25/2002	<	2.90E-02
6/25/2002	7/2/2002	<	3.50E-02

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

API-4 THIRD QUARTER

Start Date	End Date	Activity	
7/2/2002	7/9/2002	<	4.40E-02
7/9/2002	7/16/2002	<	2.50E-02
7/16/2002	7/23/2002	<	3.20E-02
7/23/2002	7/30/2002	<	3.40E-02
7/30/2002	8/6/2002	<	3.60E-02
8/6/2002	8/13/2002	<	5.00E-02
8/13/2002	8/20/2002	<	3.20E-02
8/20/2002	8/27/2002	<	3.10E-02
8/27/2002	9/3/2002	<	3.60E-02
9/3/2002	9/10/2002	<	3.50E-02
9/10/2002	9/17/2002	<	4.70E-02
9/17/2002	9/24/2002	<	5.60E-02
9/24/2002	10/1/2002	<	5.50E-02

API-4 FOURTH QUARTER

Start Date	End Date	Activity	
10/1/2002	10/8/2002	<	3.50E-02
10/8/2002	10/15/2002	<	5.50E-02
10/15/2002	10/22/2002	<	3.60E-02
10/22/2002	10/30/2002	<	3.50E-02
10/30/2002	11/5/2002	<	4.30E-02
11/5/2002	11/12/2002	<	3.10E-02
11/12/2002	11/19/2002	<	5.50E-02
11/19/2002	11/26/2002	<	3.10E-02
11/26/2002	12/3/2002	<	4.40E-02
12/3/2002	12/10/2002	<	4.80E-02
12/10/2002	12/17/2002		(a)
12/17/2002	12/23/2002	<	6.70E-02
12/23/2002	12/30/2002	<	3.60E-02

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

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

API-5 FIRST QUARTER

Start Date	End Date	Activity	
1/2/2002	1/8/2002	<	5.00E-02
1/8/2002	1/15/2002	<	2.70E-02
1/15/2002	1/22/2002	<	3.50E-02
1/22/2002	1/29/2002	<	3.70E-02
1/29/2002	2/5/2002	<	4.70E-02
2/5/2002	2/12/2002	<	3.50E-02
2/12/2002	2/19/2002	<	3.20E-02
2/19/2002	2/26/2002	<	3.60E-02
2/26/2002	3/5/2002	<	4.30E-02
3/5/2002	3/12/2002	<	4.90E-02
3/12/2002	3/20/2002	<	4.40E-02
3/20/2002	3/26/2002	<	3.60E-02
3/26/2002	4/2/2002	<	3.40E-02

API-5 SECOND QUARTER

Start Date	End Date	Activity	
4/2/2002	4/9/2002	<	5.10E-02
4/9/2002	4/16/2002	<	3.20E-02
4/16/2002	4/23/2002	<	4.40E-02
4/23/2002	4/30/2002	<	4.90E-02
4/30/2002	5/7/2002	<	3.70E-02
5/7/2002	5/14/2002	<	4.00E-02
5/14/2002	5/22/2002		(a)
5/22/2002	5/28/2002	<	5.30E-02
5/28/2002	6/4/2002	<	3.60E-02
6/4/2002	6/11/2002	<	3.70E-02
6/11/2002	6/18/2002	<	4.70E-02
6/18/2002	6/25/2002	<	3.70E-02
6/25/2001	7/2/2002		(a)

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

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

API-5 THIRD QUARTER

Start Date	End Date	Activity	
7/2/2002	7/9/2002		(a)
7/9/2009	7/16/2001		(a)
7/16/2002	7/23/2002	<	4.00E-02
7/23/2002	7/30/2002	<	4.80E-02
7/30/2002	8/6/2002	<	3.40E-02
8/6/2002	8/13/2002	<	6.60E-02
8/13/2002	8/20/2002	<	3.60E-02
8/20/2002	8/27/2002	<	3.70E-02
8/27/2002	9/3/2002	<	4.90E-02
9/3/2002	9/10/2002	<	4.40E-02
9/10/2002	9/17/2002	<	6.60E-02
9/17/2002	9/24/2002	<	5.40E-02
9/24/2002	10/1/2002	<	5.90E-02

API-5 FOURTH QUARTER

Start Date	End Date	Activity	
10/1/2002	10/8/2002	<	5.00E-02
10/8/2002	10/15/2002	<	5.80E-02
10/15/2002	10/22/2002	<	2.90E-02
10/22/2002	10/30/2002	<	5.80E-02
10/30/2002	11/5/2002	<	4.20E-02
11/5/2002	11/12/2002	<	2.70E-02
11/12/2002	11/19/2002	<	5.81E-02
11/19/2002	11/26/2002	<	2.70E-02
11/26/2002	12/3/2002	<	3.50E-02
12/3/2002	12/10/2002	<	3.90E-02
12/10/2002	12/17/2002	<	2.50E-02
12/17/2002	12/23/2002	<	3.60E-02
12/23/2002	12/30/2002	<	3.40E-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(a)			
Be-7		1.13E-01	+/-	2.20E-02	<	7.10E-02		
K-40	<	2.50E-02			<	2.20E-02		
Mn-54	<	1.70E-03			<	3.60E-03		
Co-58	<	4.20E-03			<	3.80E-03		
Fe-59	<	1.90E-02			<	1.90E-02		
Co-60	<	2.90E-03			<	1.50E-03		
Zn-65	<	5.70E-03			<	7.90E-03		
Zr-95	<	7.00E-03			<	1.10E-02		
Ru-103	<	4.90E-03			<	1.00E-02		
Ru-106	<	2.50E-02			<	2.10E-02		
Cs-134	<	2.10E-03			<	1.90E-03		
Cs-137	<	2.30E-03			<	1.70E-03		
Ba-140	<	2.00E-01			<	4.90E-01		
La-140	<	2.30E-01			<	5.70E-01		
Ce-141	<	9.60E-03			<	1.70E-02		
Ce-144	<	7.00E-03			<	1.20E-02		

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

Nuclide	Third Quarter (a)				Fourth Quarter			
Be-7		8.60E-02	+/-	1.50E-02		4.90E-02	+/-	1.10E-02
K-40	<	2.30E-02			<	1.70E-02		
Mn-54	<	1.80E-03			<	1.30E-03		
Co-58	<	2.00E-03			<	1.90E-03		
Fe-59	<	1.10E-02			<	7.70E-03		
Co-60	<	2.00E-03			<	1.60E-03		
Zn-65	<	4.70E-03			<	3.40E-03		
Zr-95	<	6.90E-03			<	4.50E-03		
Ru-103	<	3.30E-03			<	4.30E-03		
Ru-106	<	1.40E-02			<	1.10E-02		
Cs-134	<	2.00E-03			<	1.20E-03		
Cs-137	<	2.10E-03			<	1.30E-03		
Ba-140	<	4.30E-02			<	8.20E-02		
La-140	<	4.90E-02			<	9.40E-02		
Ce-141	<	4.90E-03			<	5.50E-03		
Ce-144	<	6.80E-03			<	4.70E-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	<	5.40E-02				8.00E-02	+/-	2.10E-02
K-40	<	2.20E-02			<	1.90E-02		
Mn-54	<	2.30E-03			<	5.00E-04		
Co-58	<	3.90E-03			<	4.90E-03		
Fe-59	<	6.00E-03			<	2.20E-02		
Co-60	<	3.00E-03			<	1.70E-03		
Zn-65	<	7.30E-03			<	4.90E-03		
Zr-95	<	9.50E-03			<	6.50E-03		
Ru-103	<	8.20E-03			<	8.40E-03		
Ru-106	<	1.60E-02			<	1.10E-02		
Cs-134	<	3.80E-03			<	2.20E-03		
Cs-137	<	1.90E-03			<	1.60E-03		
Ba-140	<	6.80E-02			<	1.10E-01		
La-140	<	7.80E-02			<	1.20E-01		
Ce-141	<	1.40E-02			<	1.20E-02		
Ce-144	<	8.90E-03			<	6.60E-03		

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

Nuclide	Third Quarter				Fourth Quarter			
Be-7		1.04E-01	+/-	1.40E-02		6.80E-02	+/-	1.60E-02
K-40	<	1.50E-02			<	2.30E-02		
Mn-54	<	2.10E-03			<	1.90E-03		
Co-58	<	3.10E-03			<	4.00E-03		
Fe-59	<	8.10E-03			<	1.10E-02		
Co-60	<	1.30E-03			<	1.70E-03		
Zn-65	<	4.00E-03			<	4.90E-03		
Zr-95	<	4.30E-03			<	7.70E-03		
Ru-103	<	3.10E-03			<	5.10E-03		
Ru-106	<	1.40E-02			<	1.40E-02		
Cs-134	<	1.70E-03			<	1.30E-03		
Cs-137	<	1.30E-03			<	1.30E-03		
Ba-140	<	4.10E-02			<	1.30E-01		
La-140	<	4.80E-02			<	1.50E-01		
Ce-141	<	4.30E-03			<	6.90E-03		
Ce-144	<	4.80E-03			<	6.70E-03		

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

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

Nuclide	First Quarter(a)				Second Quarter(a)			
Be-7	<	7.70E-02				7.00E-02	+/-	1.70E-02
K-40	<	3.30E-02			<	2.30E-02		
Mn-54	<	2.30E-03			<	2.20E-03		
Co-58	<	5.60E-03			<	3.50E-03		
Fe-59	<	8.70E-03			<	9.60E-03		
Co-60	<	2.60E-03			<	2.60E-03		
Zn-65	<	8.40E-03			<	5.60E-03		
Zr-95	<	1.10E-02			<	5.10E-03		
Ru-103	<	8.30E-03			<	8.20E-03		
Ru-106	<	1.80E-02			<	1.70E-02		
Cs-134	<	2.30E-03			<	1.40E-03		
Cs-137	<	1.40E-03			<	1.30E-03		
Ba-140	<	2.70E-01			<	2.70E-01		
La-140	<	3.10E-01			<	3.10E-01		
Ce-141	<	1.30E-02			<	8.90E-03		
Ce-144	<	7.60E-03			<	6.60E-03		

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

Nuclide	Third Quarter				Fourth Quarter(a)			
Be-7		7.40E-02	+/-	1.40E-02	<	4.20E-02		
K-40	<	2.30E-02			<	2.50E-02		
Mn-54	<	2.20E-03			<	1.70E-03		
Co-58	<	2.90E-03			<	2.70E-03		
Fe-59	<	2.00E-03			<	1.00E-02		
Co-60	<	2.30E-03			<	4.70E-04		
Zn-65	<	4.80E-03			<	4.70E-03		
Zr-95	<	6.00E-03			<	7.30E-03		
Ru-103	<	4.60E-03			<	5.10E-03		
Ru-106	<	1.20E-02			<	1.40E-02		
Cs-134	<	2.10E-03			<	1.80E-03		
Cs-137	<	1.70E-03			<	1.70E-03		
Ba-140	<	5.30E-02			<	1.00E-01		
La-140	<	6.10E-02			<	1.20E-01		
Ce-141	<	6.10E-03			<	6.30E-03		
Ce-144	<	7.00E-03			<	6.00E-03		

(a) See Appendix D, Program Execution

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

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

Nuclide	First Quarter				Second Quarter			
Be-7		7.30E-02	+/-	1.70E-02		1.33E-01	+/-	2.40E-02
K-40	<	2.80E-02			<	2.40E-02		
Mn-54	<	5.10E-04			<	1.80E-03		
Co-58	<	3.30E-03			<	4.20E-03		
Fe-59	<	2.80E-02			<	1.70E-02		
Co-60	<	3.20E-03			<	2.30E-03		
Zn-65	<	8.80E-03			<	6.60E-03		
Zr-95	<	7.90E-03			<	1.00E-02		
Ru-103	<	6.40E-03			<	1.20E-02		
Ru-106	<	2.10E-02			<	2.30E-02		
Cs-134	<	2.00E-03			<	2.60E-03		
Cs-137	<	2.00E-03			<	1.40E-03		
Ba-140	<	2.60E-01			<	3.60E-01		
La-140	<	2.90E-01			<	4.10E-01		
Ce-141	<	8.50E-03			<	1.60E-02		
Ce-144	<	6.90E-03			<	9.00E-03		

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

Nuclide	Third Quarter				Fourth Quarter(a)			
Be-7		8.20E-02	+/-	1.70E-02		7.50E-02	+/-	1.50E-02
K-40	<	3.10E-02			<	2.20E-02		
Mn-54	<	2.30E-03			<	2.20E-03		
Co-58	<	5.00E-03			<	3.30E-03		
Fe-59	<	1.20E-02			<	1.30E-02		
Co-60	<	1.60E-03			<	2.10E-03		
Zn-65	<	5.90E-03			<	4.70E-03		
Zr-95	<	6.00E-03			<	4.60E-03		
Ru-103	<	6.70E-03			<	5.10E-03		
Ru-106	<	1.70E-02			<	1.30E-02		
Cs-134	<	2.20E-03			<	1.70E-03		
Cs-137	<	2.10E-03			<	1.40E-03		
Ba-140	<	7.50E-02			<	1.10E-01		
La-140	<	8.60E-02			<	1.30E-01		
Ce-141	<	6.80E-03			<	6.70E-03		
Ce-144	<	8.90E-03			<	5.00E-03		

(a) See Appendix D, Program Execution.

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

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

Nuclide	First Quarter				Second Quarter(a)			
Be-7		1.10E-01	+/-	2.20E-02		1.06E-01	+/-	2.80E-02
K-40	<	3.00E-02			<	3.20E-02		
Mn-54	<	2.40E-03			<	3.80E-03		
Co-58	<	4.60E-03			<	5.40E-03		
Fe-59	<	3.00E-02			<	6 20E-03		
Co-60	<	7.30E-04			<	2.90E-03		
Zn-65	<	4.20E-03			<	5.20E-03		
Zr-95	<	7.60E-03			<	1.20E-02		
Ru-103	<	7.50E-03			<	1.30E-02		
Ru-106	<	2.10E-02			<	1.50E-02		
Cs-134	<	2.00E-03			<	3.40E-03		
Cs-137	<	2.20E-03			<	1.90E-03		
Ba-140	<	7.90E-02			<	7.90E-01		
La-140	<	9.10E-02			<	9.10E-01		
Ce-141	<	8.60E-03			<	1.70E-02		
Ce-144	<	7.80E-03			<	8.30E-03		

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

Nuclide	Third Quarter (a)				Fourth Quarter(a)			
Be-7		9.90E-02	+/-	1.80E-02		9.80E-02	+/-	1.30E-02
K-40	<	1.90E-02			<	1.60E-02		
Mn-54	<	1.70E-03			<	1.50E-03		
Co-58	<	3.60E-03			<	2.40E-03		
Fe-59	<	1.20E-02			<	5.60E-03		
Co-60	<	3.10E-03			<	1.10E-03		
Zn-65	<	6.20E-03			<	3.60E-03		
Zr-95	<	6.40E-03			<	3.40E-03		
Ru-103	<	3.80E-03			<	4.00E-03		
Ru-106	<	1.60E-02			<	1.30E-02		
Cs-134	<	1.70E-03			<	1.20E-03		
Cs-137	<	2.20E-03			<	1.20E-03		
Ba-140	<	3.90E-02			<	5.50E-02		
La-140	<	4.50E-02			<	6.40E-02		
Ce-141	<	4.80E-03			<	5.40E-03		
Ce-144	<	6 50E-03			<	4.90E-03		

(a) See Appendix D, Program Execution.

FERMI 2
MILK ANALYSIS

M-2 (Indicator)
(pCi/liter)

Nuclide	22-JAN				14-FEB				14-MAR			
I-131	<	7.50E-01			<	4.00E-01			<	6.90E-01		
Sr-89	<	7.20E+00			<	5.90E+00			<	6.80E+00		
Sr-90		1.96E+00	+/-	5.40E-01		1.74E+00	+/-	3.80E-01		1.73E+00	+/-	3.60E-01
Be-7	<	4.60E+01			<	4.10E+01			<	5.90E+01		
K-40		1.36E+03	+/-	6.70E+01		1.41E+03	+/-	4.90E+01		1.47E+03	+/-	6.80E+01
Mn-54	<	6.90E+00			<	4.80E+00			<	5.70E+00		
Co-58	<	5.80E+00			<	5.20E+00			<	7.40E+00		
Fe-59	<	2.30E+01			<	1.50E+01			<	2.30E+01		
Co-60	<	6.80E+00			<	5.70E+00			<	8.20E+00		
Zn-65	<	1.60E+01			<	1.30E+01			<	1.80E+01		
Zr-95	<	1.10E+01			<	8.60E+00			<	1.20E+01		
Ru-103	<	5.90E+00			<	5.20E+00			<	6.20E+00		
Ru-106	<	4.80E+01			<	3.90E+01			<	5.80E+01		
Cs-134	<	7.50E+00			<	6.60E+00			<	6.80E+00		
Cs-137	<	6.10E+00			<	5.00E+00			<	6.60E+00		
Ba-140	<	1.10E+01			<	8.00E+00			<	9.00E+00		
La-140	<	1.20E+01			<	9.20E+00			<	1.00E+01		
Ce-141	<	7.70E+00			<	8.40E+00			<	1.10E+01		
Ce-144	<	2.90E+01			<	2.90E+01			<	3.80E+01		

Nuclide	18-APR				16-MAY				23-MAY			
I-131	<	9.50E-01			<	9.00E-01			<	9.80E-01		
Sr-89	<	7.70E+00			<	7.50E+00			<	6.40E+00		
Sr-90	<	1.40E+00			<	1.70E+00			<	1.70E+00		
Be-7	<	4.40E+01			<	3.40E+01			<	4.60E+01		
K-40		1.33E+03	+/-	5.90E+01		1.41E+03	+/-	5.00E+01		1.46E+03	+/-	6.10E+01
Mn-54	<	6.60E+00			<	4.50E+00			<	6.10E+00		
Co-58	<	6.20E+00			<	4.20E+00			<	5.90E+00		
Fe-59	<	2.00E+01			<	1.20E+01			<	1.60E+01		
Co-60	<	6.80E+00			<	5.50E+00			<	6.70E+00		
Zn-65	<	2.40E+01			<	1.00E+01			<	2.20E+01		
Zr-95	<	9.20E+00			<	7.60E+00			<	9.70E+00		
Ru-103	<	5.90E+00			<	4.10E+00			<	6.30E+00		
Ru-106	<	4.70E+01			<	4.30E+01			<	5.30E+01		
Cs-134	<	5.10E+00			<	4.90E+00			<	6.50E+00		
Cs-137	<	6.10E+00			<	4.60E+00			<	6.20E+00		
Ba-140	<	8.40E+00			<	6.70E+00			<	1.00E+01		
La-140	<	9.70E+00			<	7.80E+00			<	1.10E+01		
Ce-141	<	5.40E+00			<	6.30E+00			<	7.40E+00		
Ce-144	<	2.50E+01			<	2.30E+01			<	2.90E+01		

FERMI 2
MILK ANALYSIS

M-2 (Indicator)
(pCi/liter)

Nuclide	13-JUN				27-JUN				11-JUL			
I-131	<	9.50E-01			<	6.90E-01			<	7.20E-01		
Sr-89	<	8.20E+00			<	8.00E+00			<	9.50E+00		
Sr-90	<	1.70E+00			<	1.40E+00			<	1.70E+00		
Be-7	<	5.20E+01			<	5.10E+01			<	4.30E+01		
K-40		1.42E+03	+/-	6.90E+01		1.30E+03	+/-	5.90E+01		1.24E+03	+/-	7.00E+01
Mn-54	<	6.60E+00			<	6.30E+00			<	7.00E+00		
Co-58	<	6.10E+00			<	6.20E+00			<	5.60E+00		
Fe-59	<	2.50E+01			<	1.80E+01			<	2.00E+01		
Co-60	<	8.10E+00			<	6.90E+00			<	6.70E+00		
Zn-65	<	2.50E+01			<	1.90E+01			<	1.60E+01		
Zr-95	<	1.10E+01			<	1.10E+01			<	7.90E+00		
Ru-103	<	6.00E+00			<	6.80E+00			<	6.30E+00		
Ru-106	<	5.60E+01			<	5.30E+01			<	5.00E+01		
Cs-134	<	6.30E+00			<	6.00E+00			<	6.30E+00		
Cs-137	<	7.20E+00			<	6.50E+00			<	5.40E+00		
Ba-140	<	8.50E+00			<	1.20E+01			<	8.70E+00		
La-140	<	9.70E+00			<	1.40E+01			<	1.00E+01		
Ce-141	<	9.00E+00			<	1.10E+01			<	8.20E+00		
Ce-144	<	3.40E+01			<	3.60E+01			<	3.10E+01		

Nuclide	25-JUL				8-AUG				22-AUG			
I-131	<	9.20E-01			<	8.80E-01			<	9.90E-01		
Sr-89	<	6.40E+00			<	9.50E+00			<	7.00E+00		
Sr-90	<	1.30E+00			<	1.80E+00			<	1.20E+00		
Be-7	<	3.90E+01			<	5.00E+01			<	3.30E+01		
K-40		1.35E+03	+/-	5.20E+01		1.37E+03	+/-	7.50E+01		1.28E+03	+/-	4.00E+01
Mn-54	<	5.10E+00			<	6.80E+00			<	3.90E+00		
Co-58	<	5.20E+00			<	7.40E+00			<	4.50E+00		
Fe-59	<	1.40E+01			<	1.50E+01			<	1.30E+01		
Co-60	<	5.10E+00			<	6.50E+00			<	4.70E+00		
Zn-65	<	1.20E+01			<	1.90E+01			<	9.50E+00		
Zr-95	<	9.00E+00			<	1.10E+01			<	7.60E+00		
Ru-103	<	4.80E+00			<	7.40E+00			<	4.90E+00		
Ru-106	<	4.60E+01			<	5.00E+01			<	3.60E+01		
Cs-134	<	4.80E+00			<	5.90E+00			<	3.90E+00		
Cs-137	<	4.70E+00			<	7.40E+00			<	3.70E+00		
Ba-140	<	8.30E+00			<	6.30E+00			<	9.50E+00		
La-140	<	9.50E+00			<	7.30E+00			<	1.10E+01		
Ce-141	<	7.90E+00			<	1.10E+01			<	8.10E+00		
Ce-144	<	2.80E+01			<	3.40E+01			<	2.30E+01		

FERMI 2
MILK ANALYSIS

M-2 (Indicator)
(pCi/liter)

Nuclide	12-SEP				26-SEP				17-OCT			
I-131	<	9.80E-01			<	1.00E+00			<	9.50E-01		
Sr-89	<	7.70E+00			<	8.00E+00			<	6.30E+00		
Sr-90	<	1.60E+00			<	1.80E+00				2.24E+00	+/-	4.50E-01
Be-7	<	4.70E+01			<	3.50E+01			<	3.80E+01		
K-40		1.39E+03	+/-	6.40E+01		1.42E+03	+/-	4.90E+01		1.41E+03	+/-	5.60E+01
Mn-54	<	6.00E+00			<	4.50E+00			<	5.20E+00		
Co-58	<	6.00E+00			<	5.10E+00			<	4.50E+00		
Fe-59	<	1.30E+01			<	1.40E+01			<	1.10E+01		
Co-60	<	6.10E+00			<	6.10E+00			<	5.70E+00		
Zn-65	<	2.30E+01			<	1.60E+01			<	1.50E+01		
Zr-95	<	1.10E+01			<	7.30E+00			<	8.40E+00		
Ru-103	<	5.70E+00			<	4.80E+00			<	4.60E+00		
Ru-106	<	5.00E+01			<	4.10E+01			<	4.70E+01		
Cs-134	<	6.40E+00			<	5.30E+00			<	5.50E+00		
Cs-137	<	5.90E+00			<	5.50E+00			<	5.30E+00		
Ba-140	<	9.90E+00			<	7.40E+00			<	8.70E+00		
La-140	<	1.10E+01			<	8.50E+00			<	1.00E+01		
Ce-141	<	1.20E+01			<	1.20E+01			<	9.90E+00		
Ce-144	<	3.90E+01			<	2.50E+01			<	2.20E+01		

Nuclide	30-OCT				21-NOV				19-DEC			
I-131	<	9.80E-01			<	8.40E-01			<	6.20E-01		
Sr-89	<	5.70E+00			<	9.40E+00			<	8.60E+00		
Sr-90		2.34E+00	+/-	4.70E-01		1.70E+00	+/-	5.00E-01	<	1.80E+00		
Be-7	<	5.40E+01			<	3.50E+01			<	4.50E+01		
K-40		1.36E+03	+/-	6.50E+01		1.43E+03	+/-	4.90E+01		1.51E+03	+/-	6.10E+01
Mn-54	<	7.50E+00			<	5.10E+00			<	5.00E+00		
Co-58	<	6.20E+00			<	3.80E+00			<	5.70E+00		
Fe-59	<	1.40E+01			<	1.30E+01			<	1.20E+01		
Co-60	<	6.70E+00			<	6.00E+00			<	6.30E+00		
Zn-65	<	1.80E+01			<	1.10E+01			<	1.10E+01		
Zr-95	<	1.20E+01			<	7.70E+00			<	9.00E+00		
Ru-103	<	7.10E+00			<	4.60E+00			<	4.70E+00		
Ru-106	<	6.00E+01			<	4.00E+01			<	5.00E+01		
Cs-134	<	6.70E+00			<	4.70E+00			<	4.90E+00		
Cs-137	<	6.40E+00			<	4.90E+00			<	5.40E+00		
Ba-140	<	1.30E+01			<	8.50E+00			<	7.60E+00		
La-140	<	1.40E+01			<	9.80E+00			<	8.70E+00		
Ce-141	<	1.10E+01			<	6.10E+00			<	7.30E+00		
Ce-144	<	4.00E+01			<	2.30E+01			<	2.70E+01		

FERMI 2
MILK ANALYSIS

M-8 (Control)
(pCi/liter)

Nuclide	22-JAN				14-FEB				14-MAR			
I-131	<	6.30E-01			<	3.60E-01			<	7.00E-01		
Sr-89	<	7.30E+00			<	6.80E+00			<	4.80E+00		
Sr-90	<	1.70E+00			<	1.40E+00			<	1.80E+00		
Be-7	<	3.70E+01			<	3.60E+01			<	4.10E+01		
K-40		1.44E+03	+/-	5.00E+01		1.45E+03	+/-	5.70E+01		1.31E+03	+/-	5.40E+01
Mn-54	<	4.50E+00			<	5.70E+00			<	4.90E+00		
Co-58	<	4.00E+00			<	5.40E+00			<	4.50E+00		
Fe-59	<	1.40E+01			<	2.10E+01			<	1.80E+01		
Co-60	<	5.10E+00			<	6.60E+00			<	7.30E+00		
Zn-65	<	1.20E+01			<	1.40E+01			<	1.30E+01		
Zr-95	<	7.30E+00			<	8.50E+00			<	8.10E+00		
Ru-103	<	4.20E+00			<	5.50E+00			<	5.30E+00		
Ru-106	<	4.30E+01			<	5.00E+01			<	4.30E+01		
Cs-134	<	4.70E+00			<	5.40E+00			<	5.40E+00		
Cs-137	<	4.60E+00			<	5.20E+00			<	4.90E+00		
Ba-140	<	6.20E+00			<	1.00E+01			<	9.50E+00		
La-140	<	7.20E+00			<	1.10E+01			<	1.10E+01		
Ce-141	<	6.00E+00			<	6.80E+00			<	6.70E+00		
Ce-144	<	2.40E+01			<	2.30E+01			<	2.30E+01		

Nuclide	18-APR				16-MAY				23-MAY			
I-131	<	9.80E-01			<	9.40E-01			<	9.20E-01		
Sr-89	<	9.70E+00			<	9.00E+00			<	5.90E+00		
Sr-90	<	1.70E+00			<	1.50E+00			<	1.50E+00		
Be-7	<	3.80E+01			<	3.70E+01			<	4.20E+01		
K-40		1.34E+03	+/-	5.50E+01		1.53E+03	+/-	5.10E+01		1.51E+03	+/-	5.90E+01
Mn-54	<	5.70E+00			<	4.60E+00			<	4.80E+00		
Co-58	<	5.20E+00			<	4.90E+00			<	5.10E+00		
Fe-59	<	1.80E+01			<	1.30E+01			<	1.80E+01		
Co-60	<	6.10E+00			<	4.50E+00			<	5.30E+00		
Zn-65	<	1.40E+01			<	1.30E+01			<	1.40E+01		
Zr-95	<	8.60E+00			<	7.30E+00			<	8.60E+00		
Ru-103	<	4.90E+00			<	4.80E+00			<	5.80E+00		
Ru-106	<	4.70E+01			<	4.20E+01			<	5.00E+01		
Cs-134	<	5.60E+00			<	5.30E+00			<	4.40E+00		
Cs-137	<	5.70E+00			<	4.80E+00			<	5.10E+00		
Ba-140	<	8.60E+00			<	7.00E+00			<	9.30E+00		
La-140	<	9.90E+00			<	8.00E+00			<	1.10E+01		
Ce-141	<	6.20E+00			<	6.60E+00			<	7.40E+00		
Ce-144	<	2.30E+01			<	2.50E+01			<	2.90E+01		

FERMI 2
MILK ANALYSIS

M-8 (Control)
(pCi/liter)

Nuclide		13-JUN				27-JUN				11-JUL		
I-131	<	8.30E-01			<	6.80E-01			<	8.40E-01		
Sr-89	<	6.50E+00			<	8.50E+00			<	8.60E+00		
Sr-90	<	1.60E+00			<	1.50E+00			<	1.50E+00		
Be-7	<	5.10E+01			<	3.60E+01			<	3.20E+01		
K-40		1.45E+03	+/-	6.90E+01		1.39E+03	+/-	4.70E+01		1.43E+03	+/-	5.40E+01
Mn-54	<	7.40E+00			<	4.90E+00			<	4.40E+00		
Co-58	<	6.00E+00			<	4.40E+00			<	3.80E+00		
Fe-59	<	1.50E+01			<	1.70E+01			<	1.40E+01		
Co-60	<	7.00E+00			<	4.70E+00			<	4.40E+00		
Zn-65	<	1.70E+01			<	1.10E+01			<	1.20E+01		
Zr-95	<	1.20E+01			<	6.70E+00			<	7.00E+00		
Ru-103	<	6.20E+00			<	5.00E+00			<	4.40E+00		
Ru-106	<	5.20E+01			<	4.20E+01			<	3.90E+01		
Cs-134	<	6.60E+00			<	4.30E+00			<	3.70E+00		
Cs-137	<	6.10E+00			<	4.90E+00			<	4.50E+00		
Ba-140	<	1.00E+01			<	1.10E+01			<	6.90E+00		
La-140	<	1.20E+01			<	1.20E+01			<	7.90E+00		
Ce-141	<	1.00E+01			<	6.90E+00			<	6.90E+00		
Ce-144	<	3.50E+01			<	2.40E+01			<	2.70E+01		

Nuclide		25-JUL				8-AUG				22-AUG		
I-131	<	8.30E-01			<	9.80E-01			<	9.60E-01		
Sr-89	<	6.40E+00			<	7.60E+00			<	6.70E+00		
Sr-90	<	1.40E+00			<	1.40E+00			<	1.70E+00		
Be-7	<	3.90E+01			<	4.90E+01			<	3.90E+01		
K-40		1.43E+03	+/-	5.70E+01		1.28E+03	+/-	7.40E+01		1.29E+03	+/-	5.20E+01
Mn-54	<	5.10E+00			<	6.70E+00			<	5.50E+00		
Co-58	<	4.70E+00			<	7.20E+00			<	4.80E+00		
Fe-59	<	1.60E+01			<	1.60E+01			<	1.80E+01		
Co-60	<	4.70E+00			<	6.80E+00			<	6.90E+00		
Zn-65	<	1.30E+01			<	1.80E+01			<	2.10E+01		
Zr-95	<	9.00E+00			<	1.10E+01			<	8.90E+00		
Ru-103	<	5.20E+00			<	6.60E+00			<	5.20E+00		
Ru-106	<	5.20E+01			<	5.80E+01			<	4.60E+01		
Cs-134	<	5.20E+00			<	6.40E+00			<	4.80E+00		
Cs-137	<	5.60E+00			<	6.30E+00			<	5.10E+00		
Ba-140	<	8.40E+00			<	1.30E+01			<	1.30E+01		
La-140	<	9.70E+00			<	1.50E+01			<	1.40E+01		
Ce-141	<	6.80E+00			<	1.10E+01			<	6.90E+00		
Ce-144	<	2.70E+01			<	3.30E+01			<	2.30E+01		

FERMI 2
MILK ANALYSIS

M-8 (Control)
(pCi/liter)

Nuclide	12-SEP				26-SEP				17-OCT			
I-131	<	9.90E-01			<	9.80E-01			<	9.40E-01		
Sr-89	<	8.50E+00			<	6.90E+00			<	7.00E+00		
Sr-90	<	1.70E+00			<	1.60E+00				2.13E+00	+/-	4.80E-01
Be-7	<	3.80E+01			<	5.20E+01			<	3.40E+01		
K-40		1.49E+03	+/-	5.40E+01		1.36E+03	+/-	5.90E+01		1.34E+03	+/-	4.70E+01
Mn-54	<	4.10E+00			<	6.00E+00			<	4.30E+00		
Co-58	<	4.30E+00			<	6.10E+00			<	4.10E+00		
Fe-59	<	1.10E+01			<	2.10E+01			<	1.10E+01		
Co-60	<	5.10E+00			<	7.00E+00			<	5.10E+00		
Zn-65	<	1.30E+01			<	2.40E+01			<	9.70E+00		
Zr-95	<	7.90E+00			<	1.00E+01			<	6.70E+00		
Ru-103	<	4.30E+00			<	6.30E+00			<	4.20E+00		
Ru-106	<	4.00E+01			<	5.00E+01			<	3.70E+01		
Cs-134	<	4.20E+00			<	6.20E+00			<	4.80E+00		
Cs-137	<	4.30E+00			<	6.00E+00			<	4.60E+00		
Ba-140	<	5.30E+00			<	1.00E+01			<	7.70E+00		
La-140	<	6.10E+00			<	1.20E+01			<	8.90E+00		
Ce-141	<	7.30E+00			<	1.00E+01			<	6.30E+00		
Ce-144	<	2.60E+01			<	3.30E+01			<	1.90E+01		

Nuclide	31-OCT				21-NOV				19-DEC			
I-131	<	9.40E-01			<	9.20E-01			<	8.70E-01		
Sr-89	<	7.20E+00			<	9.50E+00			<	7.10E+00		
Sr-90	<	1.70E+00				2.53E+00	+/-	5.10E-01	<	1.40E+00		
Be-7	<	2.40E+01			<	3.10E+01			<	3.60E+01		
K-40		1.44E+03	+/-	3.40E+01		1.41E+03	+/-	4.90E+01		1.44E+03	+/-	4.90E+01
Mn-54	<	2.80E+00			<	4.70E+00			<	4.30E+00		
Co-58	<	3.20E+00			<	5.10E+00			<	4.70E+00		
Fe-59	<	7.00E+00			<	1.20E+01			<	9.30E+00		
Co-60	<	3.50E+00			<	5.80E+00			<	4.80E+00		
Zn-65	<	1.30E+01			<	1.20E+01			<	1.10E+01		
Zr-95	<	5.90E+00			<	8.30E+00			<	7.20E+00		
Ru-103	<	3.20E+00			<	4.90E+00			<	4.80E+00		
Ru-106	<	2.80E+01			<	4.10E+01			<	3.90E+01		
Cs-134	<	2.90E+00			<	5.10E+00			<	4.50E+00		
Cs-137	<	3.20E+00			<	4.40E+00			<	4.20E+00		
Ba-140	<	4.80E+00			<	8.00E+00			<	6.40E+00		
La-140	<	5.50E+00			<	9.20E+00			<	7.40E+00		
Ce-141	<	4.30E+00			<	1.20E+01			<	6.30E+00		
Ce-144	<	1.50E+01			<	2.40E+01			<	2.10E+01		

FERMI 2
VEGETABLE ANALYSIS

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

Nuclide	25-JUL Broccoli				25-JUL Cabbage				25-JUL Swiss Chard			
I-131	<	4.10E+01			<	5.00E+01			<	5.70E+01		
Be-7	<	3.00E+02			<	3.60E+02			<	2.60E+02		
K-40		3.40E+03	+/-	4.00E+02		2.44E+03	+/-	3.20E+02		4.85E+03	+/-	2.50E+02
Mn-54	<	4.20E+01			<	5.70E+01			<	2.20E+01		
Co-58	<	4.60E+01			<	4.70E+01			<	2.40E+01		
Fe-59	<	1.80E+02			<	1.70E+02			<	6.80E+01		
Co-60	<	7.20E+01			<	4.10E+01			<	2.60E+01		
Zn-65	<	1.30E+02			<	1.50E+02			<	5.60E+01		
Zr-95	<	8.90E+01			<	8.70E+01			<	4.50E+01		
Ru-103	<	4.60E+01			<	5.20E+01			<	2.70E+01		
Ru-106	<	3.80E+02			<	3.80E+02			<	2.40E+02		
Cs-134	<	5.70E+01			<	4.70E+01			<	2.30E+01		
Cs-137	<	5.00E+01			<	4.30E+01			<	2.60E+01		
Ba-140	<	1.10E+02			<	8.70E+01			<	3.80E+01		
La-140	<	1.30E+02			<	1.00E+02			<	4.40E+01		
Ce-141	<	5.50E+01			<	8.00E+01			<	3.30E+01		
Ce-144	<	1.80E+02			<	2.50E+02			<	1.10E+02		

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

Nuclide	5-SEP Broccoli				5-SEP Cabbage				5-SEP Swiss Chard			
I-131	<	5.90E+01			<	5.80E+01			<	5.70E+01		
Be-7	<	3.70E+02			<	4.70E+02			<	5.60E+02		
K-40		4.43E+03	+/-	3.50E+02		4.76E+03	+/-	4.00E+02		5.37E+03	+/-	5.00E+02
Mn-54	<	3.90E+01			<	4.70E+01			<	6.70E+01		
Co-58	<	4.40E+01			<	5.70E+01			<	7.10E+01		
Fe-59	<	9.50E+01			<	1.50E+02			<	1.70E+02		
Co-60	<	4.70E+01			<	5.50E+01			<	7.60E+01		
Zn-65	<	1.10E+02			<	1.60E+02			<	1.90E+02		
Zr-95	<	8.40E+01			<	8.50E+01			<	1.00E+02		
Ru-103	<	5.00E+01			<	5.80E+01			<	6.40E+01		
Ru-106	<	3.30E+02			<	5.10E+02			<	4.30E+02		
Cs-134	<	4.20E+01			<	4.80E+01			<	4.50E+01		
Cs-137	<	3.70E+01			<	5.50E+01			<	6.40E+01		
Ba-140	<	2.00E+02			<	2.00E+02			<	2.10E+02		
La-140	<	2.30E+02			<	2.30E+02			<	2.40E+02		
Ce-141	<	7.80E+01			<	9.20E+01			<	9.80E+01		
Ce-144	<	2.30E+02			<	2.50E+02			<	2.20E+02		

FERMI 2
VEGETABLE ANALYSIS

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

Nuclide	5-SEP Cabbage				5-SEP Horseradish			
I-131	<	6.00E+01			<	5.90E+01		
Be-7	<	3.70E+02			<	4.40E+02		
K-40		7.68E+03	+/-	5.00E+02		6.19E+03	+/-	4.70E+02
Mn-54	<	5.60E+01			<	5.00E+01		
Co-58	<	5.00E+01			<	5.50E+01		
Fe-59	<	1.50E+02			<	1.20E+02		
Co-60	<	6.90E+01			<	5.80E+01		
Zn-65	<	1.40E+02			<	1.40E+02		
Zr-95	<	9.30E+01			<	9.90E+01		
Ru-103	<	5.20E+01			<	5.50E+01		
Ru-106	<	4.30E+02			<	5.00E+02		
Cs-134	<	5.00E+01			<	4.80E+01		
Cs-137	<	4.60E+01			<	5.60E+01		
Ba-140	<	1.50E+02			<	2.00E+02		
La-140	<	1.70E+02			<	2.30E+02		
Ce-141	<	7.60E+01			<	7.70E+01		
Ce-144	<	2.00E+02			<	1.90E+02		

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

Nuclide	5-SEP Red Cabbage			
I-131	<	5.90E+01		
Be-7	<	4.50E+02		
K-40		5.46E+03	+/-	4.80E+02
Mn-54	<	6.00E+01		
Co-58	<	4.80E+01		
Fe-59	<	1.50E+02		
Co-60	<	6.50E+01		
Zn-65	<	1.30E+02		
Zr-95	<	9.70E+01		
Ru-103	<	6.60E+01		
Ru-106	<	4.60E+02		
Cs-134	<	5.10E+01		
Cs-137	<	5.20E+01		
Ba-140	<	1.40E+02		
La-140	<	1.60E+02		
Ce-141	<	7.40E+01		
Ce-144	<	2.00E+02		

FERMI 2
DRINKING WATER ANALYSIS

DW-1 (Indicator)
(pCi/liter)

Nuclide	29-JAN				26-FEB				26-MAR			
GR-B		3.59E+00	+/-	6.30E-01	<	3.20E+00				5.76E+00	+/-	8.80E-01
Sr-89	<	5.80E+00			<	7.00E+00			<	5.80E+00		
Sr-90	<	1.50E+00			<	1.70E+00			<	1.60E+00		
Be-7	<	3.20E+01			<	3.10E+01			<	3.40E+01		
K-40	<	6.10E+01			<	5.80E+01			<	6.10E+01		
Mn-54	<	4.00E+00			<	3.90E+00			<	4.30E+00		
Co-58	<	3.90E+00			<	4.00E+00			<	3.80E+00		
Fe-59	<	1.10E+01			<	1.20E+01			<	1.10E+01		
Co-60	<	4.30E+00			<	4.70E+00			<	4.20E+00		
Zn-65	<	9.30E+00			<	7.70E+00			<	1.00E+01		
Zr-95	<	6.90E+00			<	6.80E+00			<	6.70E+00		
Ru-103	<	4.20E+00			<	4.30E+00			<	3.90E+00		
Ru-106	<	3.90E+01			<	3.90E+01			<	3.70E+01		
Cs-134	<	3.70E+00			<	4.30E+00			<	3.70E+00		
Cs-137	<	4.50E+00			<	4.10E+00			<	4.30E+00		
Ba-140	<	6.20E+00			<	6.60E+00			<	7.10E+00		
La-140	<	7.20E+00			<	7.60E+00			<	8.20E+00		
Ce-141	<	5.60E+00			<	5.80E+00			<	5.70E+00		
Ce-144	<	2.10E+01			<	2.20E+01			<	2.10E+01		

Nuclide	30-APR				30-MAY				25-JUN			
GR-B		3.40E+00	+/-	1.10E+00		5.44E+00	+/-	6.80E-01		5.27E+00	+/-	7.80E-01
Sr-89	<	8.40E+00			<	9.30E+00			<	8.30E+00		
Sr-90	<	1.60E+00			<	1.70E+00			<	1.80E+00		
Be-7	<	3.10E+01			<	3.60E+01			<	3.70E+01		
K-40	<	6.10E+01			<	6.30E+01			<	6.80E+01		
Mn-54	<	3.40E+00			<	4.10E+00			<	4.20E+00		
Co-58	<	3.60E+00			<	4.50E+00			<	4.60E+00		
Fe-59	<	1.10E+01			<	1.10E+01			<	1.60E+01		
Co-60	<	3.70E+00			<	4.50E+00			<	5.60E+00		
Zn-65	<	8.70E+00			<	9.00E+00			<	9.50E+00		
Zr-95	<	6.50E+00			<	6.40E+00			<	7.50E+00		
Ru-103	<	4.10E+00			<	4.70E+00			<	5.20E+00		
Ru-106	<	3.60E+01			<	4.10E+01			<	4.20E+01		
Cs-134	<	3.70E+00			<	4.30E+00			<	4.60E+00		
Cs-137	<	4.10E+00			<	4.30E+00			<	4.30E+00		
Ba-140	<	6.10E+00			<	9.00E+00			<	1.00E+01		
La-140	<	7.00E+00			<	1.00E+01			<	1.20E+01		
Ce-141	<	6.10E+00			<	7.30E+00			<	6.10E+00		
Ce-144	<	1.90E+01			<	2.20E+01			<	2.00E+01		

FERMI 2
DRINKING WATER ANALYSIS

DW-1 (Indicator)
(pCi/liter)

Nuclide	30-JUL				27-AUG				24-SEP			
GR-B		4.70E+00	+/-	1.10E+00		1.00E+01	+/-	1.40E+00		3.59E+00	+/-	9.80E-01
Sr-89	<	9.10E+00			<	6.10E+00			<	6.80E+00		
Sr-90	<	1.80E+00			<	1.50E+00			<	1.60E+00		
Be-7	<	4.60E+01			<	3.10E+01			<	3.90E+01		
K-40	<	9.20E+01			<	4.10E+01			<	6.60E+01		
Mn-54	<	5.40E+00			<	3.10E+00			<	5.20E+00		
Co-58	<	6.60E+00			<	3.70E+00			<	5.20E+00		
Fe-59	<	1.20E+01			<	1.10E+01			<	9.80E+00		
Co-60	<	6.80E+00			<	3.00E+00			<	5.20E+00		
Zn-65	<	1.40E+01			<	1.30E+01			<	1.90E+01		
Zr-95	<	1.00E+01			<	6.20E+00			<	8.40E+00		
Ru-103	<	5.90E+00			<	4.40E+00			<	5.80E+00		
Ru-106	<	5.00E+01			<	3.20E+01			<	4.20E+01		
Cs-134	<	5.50E+00			<	3.20E+00			<	5.00E+00		
Cs-137	<	6.00E+00			<	3.80E+00			<	6.20E+00		
Ba-140	<	1.10E+01			<	9.40E+00			<	8.80E+00		
La-140	<	1.30E+01			<	1.10E+01			<	1.00E+01		
Ce-141	<	7.20E+00			<	7.00E+00			<	1.10E+01		
Ce-144	<	2.50E+01			<	2.30E+01			<	3.90E+01		

Nuclide	30-OCT				26-NOV				30-DEC			
GR-B		1.06E+01	+/-	1.40E+00		4.10E+00	+/-	1.10E+00		3.05E+00	+/-	9.60E-01
Sr-89	<	6.20E+00			<	8.00E+00			<	7.70E+00		
Sr-90	<	1.70E+00			<	1.60E+00			<	1.60E+00		
Be-7	<	5.10E+01			<	3.80E+01			<	3.00E+01		
K-40	<	7.90E+01			<	7.00E+01			<	5.80E+01		
Mn-54	<	7.20E+00			<	4.50E+00			<	3.60E+00		
Co-58	<	6.00E+00			<	4.10E+00			<	3.40E+00		
Fe-59	<	1.20E+01			<	8.70E+00			<	6.90E+00		
Co-60	<	4.50E+00			<	4.60E+00			<	3.10E+00		
Zn-65	<	2.70E+01			<	1.20E+01			<	8.70E+00		
Zr-95	<	1.30E+01			<	8.40E+00			<	6.00E+00		
Ru-103	<	6.60E+00			<	4.60E+00			<	3.70E+00		
Ru-106	<	5.00E+01			<	4.20E+01			<	3.30E+01		
Cs-134	<	5.80E+00			<	4.60E+00			<	3.30E+00		
Cs-137	<	5.70E+00			<	4.70E+00			<	3.60E+00		
Ba-140	<	1.00E+01			<	8.90E+00			<	5.80E+00		
La-140	<	1.10E+01			<	1.00E+01			<	6.70E+00		
Ce-141	<	9.90E+00			<	6.40E+00			<	5.50E+00		
Ce-144	<	3.70E+01			<	2.00E+01			<	2.10E+01		

FERMI 2
DRINKING WATER ANALYSIS

DW-2 (Control)
(pCi/liter)

Nuclide	29-JAN				26-FEB				26-MAR			
GR-B		2.46E+00	+/-	5.80E-01		3.60E+00	+/-	1.00E+00		5.37E+00	+/-	8.30E-01
Sr-89	<	6.30E+00			<	6.70E+00			<	6.10E+00		
Sr-90	<	1.70E+00			<	1.60E+00			<	1.70E+00		
Be-7	<	3.30E+01			<	2.60E+01			<	3.50E+01		
K-40	<	5.90E+01			<	5.00E+01			<	6.10E+01		
Mn-54	<	3.80E+00			<	3.20E+00			<	4.10E+00		
Co-58	<	4.20E+00			<	3.30E+00			<	4.50E+00		
Fe-59	<	1.00E+01			<	8.60E+00			<	1.10E+01		
Co-60	<	4.10E+00			<	3.50E+00			<	3.70E+00		
Zn-65	<	1.10E+01			<	7.70E+00			<	9.60E+00		
Zr-95	<	6.10E+00			<	4.90E+00			<	6.80E+00		
Ru-103	<	4.10E+00			<	3.50E+00			<	4.20E+00		
Ru-106	<	3.90E+01			<	2.80E+01			<	3.80E+01		
Cs-134	<	4.40E+00			<	3.30E+00			<	4.70E+00		
Cs-137	<	4.60E+00			<	3.20E+00			<	4.60E+00		
Ba-140	<	6.60E+00			<	5.70E+00			<	6.20E+00		
La-140	<	7.60E+00			<	6.60E+00			<	7.10E+00		
Ce-141	<	7.90E+00			<	8.30E+00			<	5.80E+00		
Ce-144	<	2.10E+01			<	1.80E+01			<	2.30E+01		

Nuclide	30-APR				30-MAY				25-JUN			
GR-B		4.90E+00	+/-	1.10E+00		2.87E+00	+/-	5.60E-01		3.53E+00	+/-	6.50E-01
Sr-89	<	8.00E+00			<	8.20E+00			<	6.90E+00		
Sr-90	<	1.50E+00			<	1.60E+00			<	1.80E+00		
Be-7	<	4.60E+01			<	3.30E+01			<	2.80E+01		
K-40	<	7.90E+01			<	5.90E+01			<	5.00E+01		
Mn-54	<	5.30E+00			<	3.40E+00			<	4.00E+00		
Co-58	<	5.80E+00			<	4.10E+00			<	3.40E+00		
Fe-59	<	1.70E+01			<	9.80E+00			<	1.10E+01		
Co-60	<	5.20E+00			<	3.70E+00			<	4.30E+00		
Zn-65	<	1.30E+01			<	1.00E+01			<	7.60E+00		
Zr-95	<	9.40E+00			<	6.10E+00			<	6.00E+00		
Ru-103	<	6.10E+00			<	3.60E+00			<	4.30E+00		
Ru-106	<	4.40E+01			<	3.50E+01			<	3.40E+01		
Cs-134	<	5.70E+00			<	3.90E+00			<	3.60E+00		
Cs-137	<	5.50E+00			<	3.90E+00			<	4.10E+00		
Ba-140	<	9.70E+00			<	8.10E+00			<	7.60E+00		
La-140	<	1.10E+01			<	9.30E+00			<	8.70E+00		
Ce-141	<	9.20E+00			<	5.40E+00			<	6.70E+00		
Ce-144	<	3.40E+01			<	2.10E+01			<	2.20E+01		

FERMI 2
DRINKING WATER ANALYSIS

DW-2 (Control)
(pCi/liter)

Nuclide	30-JUL				27-AUG				24-SEP			
GR-B		5.30E+00	+/-	1.10E+00		8.80E+00	+/-	1.30E+00		4.19E+00	+/-	9.40E-01
Sr-89	<	9.60E+00			<	6.80E+00			<	7.20E+00		
Sr-90	<	1.80E+00			<	1.70E+00			<	1.70E+00		
Be-7	<	4.50E+01			<	3.90E+01			<	3.90E+01		
K-40	<	9.10E+01			<	5.80E+01			<	6.00E+01		
Mn-54	<	5.40E+00			<	4.10E+00			<	4.00E+00		
Co-58	<	5.90E+00			<	4.10E+00			<	4.90E+00		
Fe-59	<	1.30E+01			<	9.50E+00			<	7.10E+00		
Co-60	<	6.80E+00			<	4.30E+00			<	4.30E+00		
Zn-65	<	1.30E+01			<	8.40E+00			<	2.10E+01		
Zr-95	<	1.00E+01			<	7.70E+00			<	8.60E+00		
Ru-103	<	6.60E+00			<	4.20E+00			<	4.90E+00		
Ru-106	<	5.00E+01			<	4.30E+01			<	4.00E+01		
Cs-134	<	6.30E+00			<	3.50E+00			<	5.20E+00		
Cs-137	<	6.20E+00			<	4.00E+00			<	5.60E+00		
Ba-140	<	1.20E+01			<	1.00E+01			<	7.60E+00		
La-140	<	1.40E+01			<	1.20E+01			<	8 80E+00		
Ce-141	<	7.30E+00			<	8.30E+00			<	8.50E+00		
Ce-144	<	2.50E+01			<	2.50E+01			<	3.20E+01		

Nuclide	30-OCT				26-NOV				18-DEC			
GR-B	<	2.90E+00				3.40E+00	+/-	1.00E+00	<	2.80E+00		
Sr-89	<	6.60E+00			<	8.10E+00			<	8.50E+00		
Sr-90	<	1.80E+00			<	1.60E+00			<	1.80E+00		
Be-7	<	3.50E+01			<	3.70E+01			<	2.80E+01		
K-40	<	4.70E+01			<	7.00E+01			<	6 20E+01		
Mn-54	<	4.00E+00			<	4.90E+00			<	4.10E+00		
Co-58	<	4.50E+00			<	4.20E+00			<	3.60E+00		
Fe-59	<	8.80E+00			<	9.20E+00			<	8.90E+00		
Co-60	<	3.80E+00			<	4.90E+00			<	3.80E+00		
Zn-65	<	1.50E+01			<	1.00E+01			<	9.00E+00		
Zr-95	<	6.00E+00			<	7.60E+00			<	6.50E+00		
Ru-103	<	4.40E+00			<	4.30E+00			<	3.80E+00		
Ru-106	<	4.50E+01			<	3.70E+01			<	3.60E+01		
Cs-134	<	4.60E+00			<	4.10E+00			<	3.70E+00		
Cs-137	<	4.80E+00			<	4.60E+00			<	4.00E+00		
Ba-140	<	7.10E+00			<	8.90E+00			<	6.30E+00		
La-140	<	8.20E+00			<	1.00E+01			<	7.20E+00		
Ce-141	<	7.30E+00			<	6.00E+00			<	4.70E+00		
Ce-144	<	2.90E+01			<	1.90E+01			<	1.80E+01		

FERMI 2
SURFACE WATER ANALYSIS

SW-2 (Control)
(pCi/liter)

Nuclide	29-JAN		26-FEB		26-MAR	
Sr-89	<	5.90E+00	<	6.50E+00	<	6.20E+00
Sr-90	<	1.50E+00	<	1.60E+00	<	1.70E+00
Be-7	<	4.10E+01	<	3.30E+01	<	4.60E+01
K-40	<	7.90E+01	<	6.50E+01	<	8.40E+01
Mn-54	<	5.00E+00	<	4.00E+00	<	5.60E+00
Co-58	<	4.60E+00	<	4.10E+00	<	4.20E+00
Fe-59	<	1.40E+01	<	1.40E+01	<	1.50E+01
Co-60	<	5.10E+00	<	4.90E+00	<	6.00E+00
Zn-65	<	1.40E+01	<	9.90E+00	<	1.70E+01
Zr-95	<	9.60E+00	<	8.00E+00	<	8.70E+00
Ru-103	<	5.40E+00	<	4.40E+00	<	5.70E+00
Ru-106	<	4.30E+01	<	3.60E+01	<	4.60E+01
Cs-134	<	5.60E+00	<	3.80E+00	<	6.20E+00
Cs-137	<	6.00E+00	<	4.70E+00	<	5.70E+00
Ba-140	<	9.70E+00	<	9.20E+00	<	9.90E+00
La-140	<	1.10E+01	<	1.10E+01	<	1.10E+01
Ce-141	<	1.40E+01	<	5.30E+00	<	9.00E+00
Ce-144	<	3.30E+01	<	2.00E+01	<	3.30E+01

Nuclide	30-APR		30-MAY		25-JUN	
Sr-89	<	8.60E+00	<	8.50E+00	<	7.30E+00
Sr-90	<	1.70E+00	<	1.60E+00	<	1.70E+00
Be-7	<	3.30E+01	<	3.80E+01	<	4.10E+01
K-40	<	6.10E+01	<	6.70E+01	<	6.80E+01
Mn-54	<	4.00E+00	<	4.80E+00	<	4.00E+00
Co-58	<	4.30E+00	<	4.50E+00	<	5.20E+00
Fe-59	<	1.00E+01	<	1.40E+01	<	1.10E+01
Co-60	<	4.30E+00	<	4.40E+00	<	5.40E+00
Zn-65	<	8.30E+00	<	1.30E+01	<	1.10E+01
Zr-95	<	6.70E+00	<	7.20E+00	<	8.50E+00
Ru-103	<	4.10E+00	<	5.10E+00	<	5.70E+00
Ru-106	<	3.70E+01	<	3.40E+01	<	4.00E+01
Cs-134	<	3.90E+00	<	4.20E+00	<	5.60E+00
Cs-137	<	4.30E+00	<	4.60E+00	<	4.90E+00
Ba-140	<	7.00E+00	<	9.50E+00	<	1.20E+01
La-140	<	8.00E+00	<	1.10E+01	<	1.30E+01
Ce-141	<	5.70E+00	<	8.40E+00	<	1.00E+01
Ce-144	<	2.10E+01	<	2.60E+01	<	3.30E+01

FERMI 2
SURFACE WATER ANALYSIS

SW-2 (Control)
(pCi/liter)

Nuclide	30-JUL				27-AUG				24-SEP			
Sr-89	<	8.40E+00			<	6.20E+00			<	7.10E+00		
Sr-90	<	1.60E+00			<	1.60E+00			<	1.70E+00		
Be-7	<	3.20E+01			<	5.90E+01			<	3.30E+01		
K-40	<	6.50E+01			<	6.70E+01			<	5.40E+01		
Mn-54	<	3.20E+00			<	5.50E+00			<	3.50E+00		
Co-58	<	3.50E+00			<	6.20E+00			<	4.00E+00		
Fe-59	<	7.20E+00			<	1.70E+01			<	8.00E+00		
Co-60	<	4.20E+00			<	5.50E+00			<	3.40E+00		
Zn-65	<	1.10E+01			<	1.30E+01			<	9.00E+00		
Zr-95	<	7.90E+00			<	9.50E+00			<	6.10E+00		
Ru-103	<	4.10E+00			<	6.70E+00			<	4.50E+00		
Ru-106	<	3.40E+01			<	4.40E+01			<	3.10E+01		
Cs-134	<	3.60E+00			<	5.80E+00			<	4.30E+00		
Cs-137	<	4.30E+00			<	5.90E+00			<	4.20E+00		
Ba-140	<	6.30E+00			<	1.10E+01			<	6.40E+00		
La-140	<	7.30E+00			<	1.20E+01			<	7.40E+00		
Ce-141	<	6.10E+00			<	1.20E+01			<	6.20E+00		
Ce-144	<	1.90E+01			<	3.70E+01			<	2.30E+01		

Nuclide	30-OCT				26-NOV				30-DEC			
Sr-89	<	6.80E+00			<	8.30E+00			<	8.60E+00		
Sr-90	<	1.60E+00			<	1.70E+00			<	1.80E+00		
Be-7	<	3.00E+01			<	2.70E+01			<	2.60E+01		
K-40	<	5.40E+01			<	4.70E+01			<	4.90E+01		
Mn-54	<	3.60E+00			<	2.70E+00			<	3.30E+00		
Co-58	<	4.10E+00			<	3.50E+00			<	2.90E+00		
Fe-59	<	7.50E+00			<	7.40E+00			<	6.40E+00		
Co-60	<	3.10E+00			<	3.60E+00			<	3.10E+00		
Zn-65	<	1.50E+01			<	9.60E+00			<	5.60E+00		
Zr-95	<	5.90E+00			<	4.90E+00			<	4.90E+00		
Ru-103	<	4.80E+00			<	4.10E+00			<	3.20E+00		
Ru-106	<	4.00E+01			<	3.40E+01			<	2.90E+01		
Cs-134	<	4.50E+00			<	3.20E+00			<	3.30E+00		
Cs-137	<	4.70E+00			<	3.30E+00			<	3.40E+00		
Ba-140	<	6.30E+00			<	5.70E+00			<	5.40E+00		
La-140	<	7.30E+00			<	6.60E+00			<	6.20E+00		
Ce-141	<	7.00E+00			<	5.60E+00			<	7.00E+00		
Ce-144	<	2.60E+01			<	2.20E+01			<	1.70E+01		

FERMI 2
SURFACE WATER ANALYSIS

SW-3 (Indicator)
(pCi/liter)

Nuclide	29-JAN			26-FEB			26-MAR		
Sr-89	<	6.60E+00		<	6.60E+00		<	5.40E+00	
Sr-90	<	1.70E+00		<	1.60E+00		<	1.50E+00	
Be-7	<	4.50E+01		<	3.20E+01		<	2.60E+01	
K-40	<	8.30E+01		<	7.70E+01		<	5.40E+01	
Mn-54	<	5.20E+00		<	4.40E+00		<	2.90E+00	
Co-58	<	6.00E+00		<	4.80E+00		<	3.20E+00	
Fe-59	<	1.40E+01		<	1.20E+01		<	9.10E+00	
Co-60	<	6.50E+00		<	5.50E+00		<	3.30E+00	
Zn-65	<	1.40E+01		<	1.10E+01		<	7.00E+00	
Zr-95	<	9.30E+00		<	7.90E+00		<	5.50E+00	
Ru-103	<	5.40E+00		<	4.40E+00		<	3.20E+00	
Ru-106	<	4.60E+01		<	4.10E+01		<	3.10E+01	
Cs-134	<	5.30E+00		<	5.00E+00		<	3.00E+00	
Cs-137	<	6.00E+00		<	4.30E+00		<	3.30E+00	
Ba-140	<	1.10E+01		<	8.70E+00		<	5.30E+00	
La-140	<	1.20E+01		<	1.00E+01		<	6.10E+00	
Ce-141	<	6.80E+00		<	9.40E+00		<	7.40E+00	
Ce-144	<	2.60E+01		<	2.00E+01		<	1.60E+01	

Nuclide	30-APR			30-MAY			25-JUN		
Sr-89	<	8.90E+00		<	8.50E+00		<	7.50E+00	
Sr-90	<	1.70E+00		<	1.60E+00		<	1.70E+00	
Be-7	<	4.50E+01		<	3.20E+01		<	4.60E+01	
K-40	<	7.50E+01		<	6.50E+01		<	8.30E+01	
Mn-54	<	4.80E+00		<	4.50E+00		<	5.50E+00	
Co-58	<	5.00E+00		<	4.20E+00		<	5.60E+00	
Fe-59	<	1.60E+01		<	1.30E+01		<	1.30E+01	
Co-60	<	6.20E+00		<	5.40E+00		<	7.70E+00	
Zn-65	<	1.70E+01		<	9.90E+00		<	9.70E+00	
Zr-95	<	9.80E+00		<	7.40E+00		<	8.60E+00	
Ru-103	<	5.50E+00		<	4.50E+00		<	6.30E+00	
Ru-106	<	4.80E+01		<	4.10E+01		<	5.00E+01	
Cs-134	<	5.40E+00		<	4.70E+00		<	5.70E+00	
Cs-137	<	4.70E+00		<	4.40E+00		<	4.80E+00	
Ba-140	<	9.50E+00		<	1.20E+01		<	1.30E+01	
La-140	<	1.10E+01		<	1.30E+01		<	1.50E+01	
Ce-141	<	9.20E+00		<	9.30E+00		<	8.40E+00	
Ce-144	<	3.10E+01		<	1.90E+01		<	3.00E+01	

FERMI 2
SURFACE WATER ANALYSIS

SW-3 (Indicator)
(pCi/liter)

Nuclide	30-JUL			27-AUG			24-SEP		
Sr-89	<	7.90E+00		<	6.70E+00		<	7.00E+00	
Sr-90	<	1.50E+00		<	1.70E+00		<	1.60E+00	
Be-7	<	4.60E+01		<	3.10E+01		<	3.20E+01	
K-40	<	7.90E+01		<	4.30E+01		<	5.10E+01	
Mn-54	<	6.30E+00		<	3.40E+00		<	3.30E+00	
Co-58	<	5.70E+00		<	3.80E+00		<	4.50E+00	
Fe-59	<	1.20E+01		<	9.30E+00		<	7.30E+00	
Co-60	<	6.30E+00		<	3.00E+00		<	3.50E+00	
Zn-65	<	2.00E+01		<	1.20E+01		<	1.40E+01	
Zr-95	<	9.70E+00		<	5.90E+00		<	6.30E+00	
Ru-103	<	6.10E+00		<	4.00E+00		<	4.40E+00	
Ru-106	<	4.50E+01		<	3.00E+01		<	3.80E+01	
Cs-134	<	6.00E+00		<	3.40E+00		<	4.40E+00	
Cs-137	<	5.90E+00		<	3.00E+00		<	4.80E+00	
Ba-140	<	1.20E+01		<	8.80E+00		<	7.40E+00	
La-140	<	1.30E+01		<	1.00E+01		<	8.60E+00	
Ce-141	<	9.30E+00		<	7.40E+00		<	6.50E+00	
Ce-144	<	3.30E+01		<	2.20E+01		<	2.40E+01	

Nuclide	30-OCT			26-NOV(a)			30-NOV		
Sr-89	<	6.10E+00		<	9.40E+00		<	7.50E+00	
Sr-90	<	1.70E+00		<	1.90E+00		<	1.60E+00	
Be-7	<	3.50E+01		<	2.40E+01		<	2.60E+01	
K-40	<	6.70E+01		<	4.90E+01		<	5.00E+01	
Mn-54	<	6.40E+00		<	2.80E+00		<	3.40E+00	
Co-58	<	4.40E+00		<	2.70E+00		<	3.30E+00	
Fe-59	<	1.30E+01		<	5.70E+00		<	7.00E+00	
Co-60	<	5.30E+00		<	3.00E+00		<	3.60E+00	
Zn-65	<	1.30E+01		<	5.60E+00		<	1.00E+01	
Zr-95	<	8.60E+00		<	5.50E+00		<	5.50E+00	
Ru-103	<	4.80E+00		<	3.10E+00		<	3.30E+00	
Ru-106	<	4.80E+01		<	2.80E+01		<	3.00E+01	
Cs-134	<	3.70E+00		<	2.80E+00		<	3.40E+00	
Cs-137	<	5.70E+00		<	2.90E+00		<	3.40E+00	
Ba-140	<	5.50E+00		<	4.30E+00		<	4.90E+00	
La-140	<	6.30E+00		<	4.90E+00		<	5.70E+00	
Ce-141	<	8.20E+00		<	3.90E+00		<	7.60E+00	
Ce-144	<	3.00E+01		<	1.50E+01		<	1.80E+01	

(a) See Appendix D - Program Execution.

FERMI 2
DRINKING AND SURFACE WATER QUARTERLY COMPOSITE SAMPLES

Tritium
(pCi/liter)

Station	First Quarter				Second Quarter			
DW-1	<	1.30E+03			<	1.70E+03		
DW-2	<	1.20E+03			<	1.70E+03		
SW-2	<	1.30E+03			<	1.70E+03		
SW-3	<	1.30E+03			<	1.70E+03		

Station	Third Quarter				Fourth Quarter			
DW-1	<	1.30E+03			<	1.30E+03		
DW-2	<	1.30E+03			<	1.30E+03		
SW-2	<	1.30E+03			<	1.30E+03		
SW-3	<	1.30E+03			<	1.30E+03		(a)

(a) See Appendix D - Program Execution.

FERMI 2
GROUNDWATER ANALYSIS

GW-1 (Indicator)
(pCi/liter)

Nuclide	First Quarter				Second Quarter			
Be-7	<	2.90E+01			<	2.80E+01		
K-40	<	4.80E+01			<	4.80E+01		
Mn-54	<	3.70E+00			<	2.80E+00		
Co-58	<	3.40E+00			<	3.50E+00		
Fe-59	<	9.80E+00			<	8.60E+00		
Co-60	<	3.30E+00			<	3.30E+00		
Zn-65	<	8.60E+00			<	7.60E+00		
Zr-95	<	5.50E+00			<	5.80E+00		
Ru-103	<	3.90E+00			<	4.00E+00		
Ru-106	<	3.60E+01			<	3.30E+01		
Cs-134	<	3.20E+00			<	2.90E+00		
Cs-137	<	3.60E+00			<	3.50E+00		
Ba-140	<	5.20E+00			<	5.30E+00		
La-140	<	6.00E+00			<	6.10E+00		
Ce-141	<	8.60E+00			<	5.80E+00		
Ce-144	<	2.20E+01			<	2.20E+01		
H-3	<	1.20E+03			<	1.20E+03		

Nuclide	Third Quarter				Fourth Quarter			
Be-7	<	4.50E+01			<	3.30E+01		
K-40	<	7.20E+01			<	4.60E+01		
Mn-54	<	6.10E+00			<	3.80E+00		
Co-58	<	5.70E+00			<	3.40E+00		
Fe-59	<	1.40E+01			<	8.40E+00		
Co-60	<	6.20E+00			<	4.40E+00		
Zn-65	<	1.80E+01			<	7.90E+00		
Zr-95	<	8.80E+00			<	6.40E+00		
Ru-103	<	4.80E+00			<	4.30E+00		
Ru-106	<	5.70E+01			<	3.90E+01		
Cs-134	<	6.10E+00			<	3.30E+00		
Cs-137	<	5.30E+00			<	3.30E+00		
Ba-140	<	9.80E+00			<	6.80E+00		
La-140	<	1.10E+01			<	7.80E+00		
Ce-141	<	8.20E+00			<	6.20E+00		
Ce-144	<	3.20E+01			<	2.50E+01		
H-3	<	1.50E+03			<	1.20E+03		

FERMI 2
GROUNDWATER ANALYSIS

GW-2 (Indicator)
(pCi/liter)

Nuclide	First Quarter				Second Quarter			
Be-7	<	2.80E+01			<	4.00E+01		
K-40	<	3.80E+01			<	7.20E+01		
Mn-54	<	2.50E+00			<	5.80E+00		
Co-58	<	3.10E+00			<	4.80E+00		
Fe-59	<	1.00E+01			<	1.20E+01		
Co-60	<	3.30E+00			<	6.40E+00		
Zn-65	<	7.30E+00			<	1.20E+01		
Zr-95	<	6.00E+00			<	8.50E+00		
Ru-103	<	3.50E+00			<	5.70E+00		
Ru-106	<	2.80E+01			<	5.30E+01		
Cs-134	<	2.90E+00			<	5.80E+00		
Cs-137	<	3.30E+00			<	5.50E+00		
Ba-140	<	5.90E+00			<	1.10E+01		
La-140	<	6.80E+00			<	1.20E+01		
Ce-141	<	5.80E+00			<	7.80E+00		
Ce-144	<	2.10E+01			<	2.70E+01		
H-3	<	1.20E+03			<	1.20E+03		

Nuclide	Third Quarter				Fourth Quarter			
Be-7	<	4.60E+01			<	4.20E+01		
K-40	<	8.50E+01			<	6.10E+01		
Mn-54	<	7.40E+00			<	4.80E+00		
Co-58	<	7.90E+00			<	5.00E+00		
Fe-59	<	1.40E+01			<	9.50E+00		
Co-60	<	6.70E+00			<	5.20E+00		
Zn-65	<	1.40E+01			<	1.40E+01		
Zr-95	<	9.40E+00			<	8.10E+00		
Ru-103	<	6.50E+00			<	6.30E+00		
Ru-106	<	4.60E+01			<	4.20E+01		
Cs-134	<	6.20E+00			<	5.60E+00		
Cs-137	<	7.90E+00			<	4.60E+00		
Ba-140	<	1.20E+01			<	6.10E+00		
La-140	<	1.40E+01			<	7.00E+00		
Ce-141	<	1.00E+01			<	8.70E+00		
Ce-144	<	4.00E+01			<	3.10E+01		
H-3	<	1.40E+03			<	1.20E+03		

FERMI 2
GROUNDWATER ANALYSIS

GW-3 (Indicator)
(pCi/liter)

Nuclide	First Quarter				Second Quarter			
Be-7	<	3.90E+01			<	3.70E+01		
K-40	<	6.30E+01			<	4.90E+01		
Mn-54	<	5.20E+00			<	3.20E+00		
Co-58	<	5.00E+00			<	3.70E+00		
Fe-59	<	1.40E+01			<	7.70E+00		
Co-60	<	4.40E+00			<	3.30E+00		
Zn-65	<	9.70E+00			<	1.40E+01		
Zr-95	<	6.50E+00			<	5.10E+00		
Ru-103	<	6.00E+00			<	4.10E+00		
Ru-106	<	4.20E+01			<	3.90E+01		
Cs-134	<	5.30E+00			<	3.90E+00		
Cs-137	<	4.70E+00			<	4.10E+00		
Ba-140	<	8.80E+00			<	5.90E+00		
La-140	<	1.00E+01			<	6.80E+00		
Ce-141	<	8.80E+00			<	7.30E+00		
Ce-144	<	3.10E+01			<	2.50E+01		
H-3	<	1.20E+03			<	1.20E+03		

Nuclide	Third Quarter				Fourth Quarter			
Be-7	<	4.00E+01			<	4.70E+01		
K-40	<	7.10E+01			<	6.70E+01		
Mn-54	<	4.00E+00			<	5.70E+00		
Co-58	<	4.30E+00			<	5.50E+00		
Fe-59	<	1.40E+01			<	1.20E+01		
Co-60	<	4.30E+00			<	4.60E+00		
Zn-65	<	8.60E+00			<	1.50E+01		
Zr-95	<	7.50E+00			<	8.80E+00		
Ru-103	<	4.80E+00			<	6.70E+00		
Ru-106	<	4.40E+01			<	4.50E+01		
Cs-134	<	4.60E+00			<	6.00E+00		
Cs-137	<	4.40E+00			<	6.20E+00		
Ba-140	<	7.80E+00			<	1.00E+01		
La-140	<	9.00E+00			<	1.20E+01		
Ce-141	<	7.90E+00			<	7.90E+00		
Ce-144	<	2.80E+01			<	3.00E+01		
H-3	<	1.30E+03			<	1.20E+03		

FERMI 2
GROUNDWATER ANALYSIS

GW-4 (Control)
(pCi/liter)

Nuclide	First Quarter				Second Quarter			
Be-7	<	4.50E+01			<	2.80E+01		
K-40	<	7.10E+01			<	3.80E+01		
Mn-54	<	4.90E+00			<	3.10E+00		
Co-58	<	5.90E+00			<	3.10E+00		
Fe-59	<	1.50E+01			<	6.00E+00		
Co-60	<	6.00E+00			<	4.10E+00		
Zn-65	<	1.50E+01			<	8.40E+00		
Zr-95	<	7.00E+00			<	6.20E+00		
Ru-103	<	6.30E+00			<	3.60E+00		
Ru-106	<	4.20E+01			<	3.40E+01		
Cs-134	<	4.00E+00			<	3.10E+00		
Cs-137	<	5.30E+00			<	3.80E+00		
Ba-140	<	8.60E+00			<	5.10E+00		
La-140	<	9.90E+00			<	5.90E+00		
Ce-141	<	8.40E+00			<	5.80E+00		
Ce-144	<	3.00E+01			<	2.20E+01		
H-3	<	1.20E+03			<	1.20E+03		

Nuclide	Third Quarter				Fourth Quarter			
Be-7	<	3.40E+01			<	3.00E+01		
K-40	<	5.70E+01			<	5.10E+01		
Mn-54	<	3.50E+00			<	4.20E+00		
Co-58	<	4.10E+00			<	3.70E+00		
Fe-59	<	1.10E+01			<	9.30E+00		
Co-60	<	4.10E+00			<	4.10E+00		
Zn-65	<	6.10E+00			<	1.00E+01		
Zr-95	<	6.10E+00			<	6.80E+00		
Ru-103	<	4.30E+00			<	4.80E+00		
Ru-106	<	3.70E+01			<	3.70E+01		
Cs-134	<	3.90E+00			<	4.70E+00		
Cs-137	<	4.00E+00			<	4.00E+00		
Ba-140	<	7.30E+00			<	7.30E+00		
La-140	<	8.40E+00			<	8.40E+00		
Ce-141	<	5.60E+00			<	7.10E+00		
Ce-144	<	2.10E+01			<	2.60E+01		
H-3	<	1.40E+03			<	1.20E+03		

FERMI 2
SEDIMENT ANALYSIS

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

Nuclide	27-JUN				22-OCT			
Sr-89	<	2.40E+02			<	2.20E+02		
Sr-90	<	1.40E+02			<	2.90E+02		
Be-7	<	2.20E+02			<	1.10E+02		
K-40		1.10E+04	+/-	3.30E+02		9.02E+03	+/-	1.70E+02
Mn-54	<	2.80E+01			<	1.30E+01		
Co-58	<	3.00E+01			<	1.40E+01		
Fe-59	<	1.30E+02			<	3.50E+01		
Co-60	<	2.70E+01			<	1.30E+01		
Zn-65	<	1.20E+02			<	5.40E+01		
Zr-95	<	5.40E+01			<	2.30E+01		
Ru-103	<	3.30E+01			<	1.50E+01		
Ru-106	<	2.00E+02			<	9.40E+01		
Cs-134	<	1.00E+02			<	4.10E+01		
Cs-137	<	2.30E+01			<	1.20E+01		
Ba-140	<	6.10E+02			<	1.20E+02		
La-140	<	3.10E+02			<	6.10E+01		
Ce-141	<	6.40E+01			<	2.80E+01		
Ce-144	<	1.50E+02			<	8.80E+01		

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

Nuclide	27-JUN				22-OCT			
Sr-89	<	2.90E+02			<	2.70E+02		
Sr-90	<	2.80E+02			<	2.20E+02		
Be-7	<	4.80E+02			<	1.90E+02		
K-40		1.73E+04	+/-	5.20E+02		1.27E+04	+/-	2.60E+02
Mn-54	<	4.30E+01			<	2.10E+01		
Co-58	<	5.70E+01			<	2.10E+01		
Fe-59	<	2.10E+02			<	5.50E+01		
Co-60	<	3.80E+01			<	2.20E+01		
Zn-65	<	2.20E+02			<	9.10E+01		
Zr-95	<	1.10E+02			<	4.50E+01		
Ru-103	<	7.50E+01			<	2.60E+01		
Ru-106	<	3.40E+02			<	2.00E+02		
Cs-134	<	3.70E+01			<	7.70E+01		
Cs-137	<	5.40E+01			<	2.30E+01		
Ba-140	<	1.10E+03			<	2.10E+02		
La-140	<	5.60E+02			<	1.10E+02		
Ce-141	<	1.40E+02			<	5.00E+01		
Ce-144	<	3.10E+02			<	1.50E+02		

FERMI 2
SEDIMENT ANALYSIS

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

Nuclide	27-JUN				21-OCT			
Sr-89	<	2.50E+02			<	2.20E+02		
Sr-90	<	1.50E+02			<	2.80E+02		
Be-7	<	3.60E+02			<	8.20E+01		
K-40		1.35E+04	+/-	4.70E+02		1.05E+04	+/-	1.50E+02
Mn-54	<	3.20E+01			<	1.00E+01		
Co-58	<	3.80E+01			<	9.50E+00		
Fe-59	<	1.40E+02			<	2.60E+01		
Co-60	<	4.50E+01			<	9.80E+00		
Zn-65	<	1.70E+02			<	4.50E+01		
Zr-95	<	6.20E+01			<	1.80E+01		
Ru-103	<	4.20E+01			<	1.10E+01		
Ru-106	<	2.40E+02			<	8.70E+01		
Cs-134	<	2.80E+01			<	7.90E+00		
Cs-137	<	3.30E+01			<	9.40E+00		
Ba-140	<	7.10E+02			<	9.60E+01		
La-140	<	2.70E+02			<	4.60E+01		
Ce-141	<	7.60E+01			<	2.00E+01		
Ce-144	<	1.50E+02			<	5.90E+01		

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

Nuclide	16-JUL				4-NOV			
Sr-89	<	2.80E+02			<	2.60E+02		
Sr-90	<	2.80E+02			<	2.50E+02		
Be-7	<	2.40E+02			<	8.30E+01		
K-40		9.84E+03	+/-	4.00E+02		9.22E+03	+/-	1.40E+02
Mn-54	<	2.50E+01			<	9.90E+00		
Co-58	<	3.40E+01			<	1.00E+01		
Fe-59	<	1.10E+02			<	2.50E+01		
Co-60	<	3.20E+01			<	1.10E+01		
Zn-65	<	1.50E+02			<	4.60E+01		
Zr-95	<	5.10E+01			<	1.70E+01		
Ru-103	<	3.00E+01			<	9.60E+00		
Ru-106	<	2.20E+02			<	8.00E+01		
Cs-134	<	1.10E+02			<	3.50E+01		
Cs-137	<	2.60E+01			<	1.00E+01		
Ba-140	<	3.00E+02			<	5.30E+01		
La-140	<	1.20E+02			<	2.50E+01		
Ce-141	<	4.90E+01			<	1.90E+01		
Ce-144	<	1.40E+02			<	7.40E+01		

FERMI 2
SEDIMENT ANALYSIS

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

Nuclide	16-JUL				21-OCT			
Sr-89	<	2.70E+02			<	2.90E+02		
Sr-90	<	2.10E+02			<	2.60E+02		
Be-7		5.20E+02	+/-	1.00E+02		6.70E+02	+/-	1.20E+02
K-40		1.07E+04	+/-	3.40E+02		1.21E+04	+/-	2.90E+02
Mn-54	<	2.40E+01			<	2.60E+01		
Co-58	<	2.90E+01			<	2.50E+01		
Fe-59	<	9.20E+01			<	6.70E+01		
Co-60	<	2.40E+01			<	2.30E+01		
Zn-65	<	5.50E+01			<	1.10E+02		
Zr-95	<	5.30E+01			<	4.70E+01		
Ru-103	<	2.80E+01			<	3.00E+01		
Ru-106	<	2.30E+02			<	2.40E+02		
Cs-134	<	2.40E+01			<	8.60E+01		
Cs-137		5.50E+01	+/-	1.00E+01		1.09E+02	+/-	1.10E+01
Ba-140	<	2.40E+02			<	2.80E+02		
La-140	<	1.20E+02			<	1.30E+02		
Ce-141	<	5.30E+01			<	5.50E+01		
Ce-144	<	1.70E+02			<	1.70E+02		

FERMI 2
FISH ANALYSIS

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

Nuclide	28-JUN Bass				3-JUL Bullhead				25-JUN Crappie			
Sr-89	<	1.90E+02			<	2.00E+02			<	2.60E+02		
Sr-90	<	1.10E+02			<	1.20E+02			<	9.70E+01		
Be-7	<	2.70E+02			<	2.80E+02			<	7.40E+02		
K-40		3.29E+03	+/-	1.50E+02		2.37E+03	+/-	1.50E+02		3.02E+03	+/-	3.30E+02
Mn-54	<	2.40E+01			<	2.30E+01			<	5.50E+01		
Co-58	<	3.40E+01			<	3.10E+01			<	7.30E+01		
Fe-59	<	8.20E+01			<	8.20E+01			<	2.00E+02		
Co-60	<	2.20E+01			<	2.40E+01			<	5.20E+01		
Zn-65	<	6.50E+01			<	9.80E+01			<	1.80E+02		
Zr-95	<	5.70E+01			<	5.20E+01			<	1.40E+02		
Ru-103	<	4.30E+01			<	4.30E+01			<	1.10E+02		
Ru-106	<	2.10E+02			<	2.20E+02			<	4.90E+02		
Cs-134	<	2.00E+01			<	2.40E+01			<	5.10E+01		
Cs-137	<	2.20E+01			<	2.30E+01			<	5.20E+01		
Ba-140	<	2.70E+02			<	2.40E+02			<	9.30E+02		
La-140	<	3.10E+02			<	2.80E+02			<	1.10E+03		
Ce-141	<	6.10E+01			<	7.40E+01			<	2.00E+02		
Ce-144	<	1.10E+02			<	1.20E+02			<	2.70E+02		

Nuclide	3-JUL Walleye				3-JUL Perch				11-Oct Carp			
Sr-89	<	2.70E+02			<	2.80E+02			<	2.50E+02		
Sr-90	<	1.10E+02			<	1.20E+02			<	2.10E+02		
Be-7	<	5.90E+02			<	5.40E+02			<	4.30E+02		
K-40		2.68E+03	+/-	3.50E+02		2.02E+03	+/-	3.20E+02		2.01E+03	+/-	2.50E+02
Mn-54	<	5.30E+01			<	5.20E+01			<	3.40E+01		
Co-58	<	6.90E+01			<	5.00E+01			<	3.80E+01		
Fe-59	<	2.10E+02			<	1.80E+02			<	1.20E+02		
Co-60	<	3.60E+01			<	4.30E+01			<	4.00E+01		
Zn-65	<	1.80E+02			<	1.40E+02			<	1.10E+02		
Zr-95	<	1.20E+02			<	9.80E+01			<	7.10E+01		
Ru-103	<	1.00E+02			<	5.10E+01			<	5.20E+01		
Ru-106	<	3.90E+02			<	2.70E+02			<	3.40E+02		
Cs-134	<	5.10E+01			<	3.90E+01			<	4.00E+01		
Cs-137	<	6.20E+01			<	3.60E+01			<	3.50E+01		
Ba-140	<	5.30E+02			<	3.80E+02			<	3.60E+02		
La-140	<	6.10E+02			<	4.40E+02			<	4.20E+02		
Ce-141	<	1.60E+02			<	9.60E+01			<	7.40E+01		
Ce-144	<	2.40E+02			<	1.60E+02			<	1.50E+02		

FERMI 2
FISH ANALYSIS

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

Nuclide	11-OCT Catfish				11-OCT Rock Bass				11-OCT Sucker			
Sr-89	<	2.70E+02			<	2.80E+02			<	2.70E+02		
Sr-90	<	2.30E+02			<	2.40E+02			<	2.30E+02		
Be-7	<	6.80E+02			<	5.60E+02			<	6.90E+02		
K-40		3.51E+03	+/-	3.60E+02		3.71E+03	+/-	2.90E+02		4.11E+03	+/-	3.80E+02
Mn-54	<	5.90E+01			<	4.60E+01			<	6.00E+01		
Co-58	<	7.70E+01			<	5.80E+01			<	8.00E+01		
Fe-59	<	2.00E+02			<	1.60E+02			<	2.10E+02		
Co-60	<	5.90E+01			<	4.50E+01			<	5.70E+01		
Zn-65	<	2.00E+02			<	1.50E+02			<	1.30E+02		
Zr-95	<	1.20E+02			<	1.20E+02			<	1.60E+02		
Ru-103	<	9.20E+01			<	8.00E+01			<	9.20E+01		
Ru-106	<	5.20E+02			<	4.70E+02			<	6.20E+02		
Cs-134	<	5.60E+01			<	5.20E+01			<	5.60E+01		
Cs-137	<	6.00E+01			<	4.70E+01			<	6.10E+01		
Ba-140	<	5.70E+02			<	3.60E+02			<	4.00E+02		
La-140	<	6.50E+02			<	4.20E+02			<	4.60E+02		
Ce-141	<	1.30E+02			<	1.20E+02			<	1.50E+02		
Ce-144	<	2.40E+02			<	2.00E+02			<	3.00E+02		

Nuclide	11-OCT Walleye			
Sr-89	<	2.80E+02		
Sr-90	<	2.40E+02		
Be-7	<	2.90E+02		
K-40		3.59E+03	+/-	2.60E+02
Mn-54	<	3.40E+01		
Co-58	<	4.10E+01		
Fe-59	<	9.20E+01		
Co-60	<	4.00E+01		
Zn-65	<	8.50E+01		
Zr-95	<	6.80E+01		
Ru-103	<	5.40E+01		
Ru-106	<	3.50E+02		
Cs-134	<	3.00E+01		
Cs-137	<	3.40E+01		
Ba-140	<	2.40E+02		
La-140	<	2.80E+02		
Ce-141	<	8.20E+01		
Ce-144	<	1.50E+02		

FERMI 2
FISH ANALYSIS

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

Nuclide	3-JUL Catfish				3-JUL Drum				3-JUL Pike			
Sr-89	<	2.20E+02			<	2.40E+02			<	2.10E+02		
Sr-90	<	1.70E+02			<	1.70E+02			<	1.20E+02		
Be-7	<	5.10E+02			<	6.20E+02			<	4.30E+02		
K-40		1.62E+03	+/-	3.00E+02		2.76E+03	+/-	3.00E+02		3.25E+03	+/-	4.00E+02
Mn-54	<	5.60E+01			<	5.40E+01			<	5.80E+01		
Co-58	<	5.40E+01			<	7.10E+01			<	7.60E+01		
Fe-59	<	1.30E+02			<	1.70E+02			<	1.90E+02		
Co-60	<	5.10E+01			<	5.00E+01			<	6.20E+01		
Zn-65	<	2.40E+02			<	1.50E+02			<	2.40E+02		
Zr-95	<	1.10E+02			<	1.20E+02			<	1.10E+02		
Ru-103	<	6.70E+01			<	8.10E+01			<	8.40E+01		
Ru-106	<	3.50E+02			<	4.80E+02			<	4.70E+02		
Cs-134	<	5.00E+01			<	4.70E+01			<	5.30E+01		
Cs-137	<	5.20E+01			<	4.20E+01			<	4.40E+01		
Ba-140	<	7.30E+02			<	7.80E+02			<	5.00E+02		
La-140	<	8.40E+02			<	9.00E+02			<	5.80E+02		
Ce-141	<	1.20E+02			<	1.40E+02			<	1.30E+02		
Ce-144	<	2.00E+02			<	2.10E+02			<	2.30E+02		

Nuclide	3-JUL Sucker				3-JUL Walleye				3-JUL White Perch			
Sr-89	<	2.80E+02			<	2.60E+02			<	2.60E+02		
Sr-90	<	1.40E+02			<	1.30E+02			<	1.10E+02		
Be-7	<	7.50E+02			<	5.10E+02			<	5.00E+02		
K-40		2.62E+03	+/-	3.00E+02		3.01E+03	+/-	3.90E+02		2.35E+03	+/-	3.00E+02
Mn-54	<	5.40E+01			<	5.10E+01			<	3.60E+01		
Co-58	<	7.40E+01			<	5.50E+01			<	5.00E+01		
Fe-59	<	1.90E+02			<	2.40E+02			<	1.60E+02		
Co-60	<	4.10E+01			<	3.50E+01			<	5.30E+01		
Zn-65	<	1.60E+02			<	1.60E+02			<	1.30E+02		
Zr-95	<	1.20E+02			<	1.50E+02			<	9.90E+01		
Ru-103	<	1.10E+02			<	6.90E+01			<	6.30E+01		
Ru-106	<	4.70E+02			<	2.90E+02			<	3.90E+02		
Cs-134	<	5.60E+01			<	4.60E+01			<	3.50E+01		
Cs-137	<	5.20E+01			<	5.90E+01			<	4.00E+01		
Ba-140	<	7.40E+02			<	6.60E+02			<	4.40E+02		
La-140	<	8.50E+02			<	7.60E+02			<	5.10E+02		
Ce-141	<	1.70E+02			<	1.30E+02			<	1.10E+02		
Ce-144	<	3.00E+02			<	1.90E+02			<	2.00E+02		

FERMI 2
FISH ANALYSIS

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

Nuclide	3-JUL Yellow Perch				16-OCT Carp				16-OCT Walleye			
Sr-89	<	2.10E+02			<	2.30E+02			<	2.40E+02		
Sr-90	<	1.50E+02			<	2.10E+02			<	2.10E+02		
Be-7	<	7.40E+02			<	3.30E+02			<	4.10E+02		
K-40		2.65E+03	+/-	3.60E+02		2.09E+03	+/-	2.70E+02		3.42E+03	+/-	3.30E+02
Mn-54	<	6.30E+01			<	3.30E+01			<	3.70E+01		
Co-58	<	7.30E+01			<	4.40E+01			<	5.50E+01		
Fe-59	<	2.00E+02			<	1.10E+02			<	1.30E+02		
Co-60	<	5.10E+01			<	4.10E+01			<	4.80E+01		
Zn-65	<	1.60E+02			<	8.70E+01			<	1.20E+02		
Zr-95	<	1.40E+02			<	7.60E+01			<	8.10E+01		
Ru-103	<	1.00E+02			<	5.00E+01			<	5.70E+01		
Ru-106	<	4.50E+02			<	3.70E+02			<	3.30E+02		
Cs-134	<	5.90E+01			<	2.10E+01			<	3.80E+01		
Cs-137	<	5.70E+01			<	3.10E+01			<	2.70E+01		
Ba-140	<	7.70E+02			<	1.40E+02			<	2.20E+02		
La-140	<	8.90E+02			<	1.60E+02			<	2.50E+02		
Ce-141	<	1.70E+02			<	6.80E+01			<	6.80E+01		
Ce-144	<	3.10E+02			<	1.60E+02			<	1.60E+02		

Nuclide	16-OCT White Bass				16-OCT White Perch				16-OCT Yellow Perch			
Sr-89	<	2.40E+02			<	2.40E+02			<	2.40E+02		
Sr-90	<	2.20E+02			<	2.10E+02			<	2.10E+02		
Be-7	<	5.70E+02			<	6.00E+02			<	5.10E+02		
K-40		4.10E+03	+/-	3.20E+02		3.91E+03	+/-	3.60E+02		4.17E+03	+/-	2.90E+02
Mn-54	<	5.00E+01			<	5.90E+01			<	4.70E+01		
Co-58	<	6.50E+01			<	6.60E+01			<	5.30E+01		
Fe-59	<	1.80E+02			<	1.90E+02			<	1.40E+02		
Co-60	<	6.10E+01			<	6.10E+01			<	5.50E+01		
Zn-65	<	1.90E+02			<	1.50E+02			<	1.40E+02		
Zr-95	<	1.20E+02			<	1.20E+02			<	9.80E+01		
Ru-103	<	8.40E+01			<	8.00E+01			<	7.20E+01		
Ru-106	<	5.20E+02			<	5.30E+02			<	4.30E+02		
Cs-134	<	5.70E+01			<	5.50E+01			<	4.50E+01		
Cs-137	<	5.50E+01			<	5.60E+01			<	4.30E+01		
Ba-140	<	4.40E+02			<	4.70E+02			<	3.50E+02		
La-140	<	5.00E+02			<	5.40E+02			<	4.00E+02		
Ce-141	<	1.20E+02			<	1.20E+02			<	1.20E+02		
Ce-144	<	2.50E+02			<	2.30E+02			<	2.20E+02		

FERMI 2
FISH ANALYSIS

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

Nuclide	3-JUL Drum				3-JUL Sucker				3-JUL Walleye			
Sr-89	<	2.90E+02			<	2.10E+02			<	2.70E+02		
Sr-90	<	2.10E+02			<	1.50E+02			<	1.90E+02		
Be-7	<	6.80E+02			<	8.40E+02			<	5.40E+02		
K-40		2.48E+03	+/-	3.10E+02		1.96E+03	+/-	3.70E+02		2.96E+03	+/-	3.50E+02
Mn-54	<	4.00E+01			<	5.10E+01			<	4.70E+01		
Co-58	<	7.80E+01			<	8.00E+01			<	7.00E+01		
Fe-59	<	2.00E+02			<	2.50E+02			<	2.10E+02		
Co-60	<	4.60E+01			<	3.80E+01			<	4.50E+01		
Zn-65	<	1.30E+02			<	2.50E+02			<	1.30E+02		
Zr-95	<	1.30E+02			<	1.40E+02			<	1.30E+02		
Ru-103	<	9.00E+01			<	8.40E+01			<	7.80E+01		
Ru-106	<	4.80E+02			<	5.60E+02			<	4.60E+02		
Cs-134	<	4.40E+01			<	6.00E+01			<	3.40E+01		
Cs-137	<	4.90E+01			<	6.20E+01			<	3.90E+01		
Ba-140	<	7.20E+02			<	9.50E+02			<	6.60E+02		
La-140	<	8.30E+02			<	1.10E+03			<	7.60E+02		
Ce-141	<	1.60E+02			<	1.60E+02			<	1.40E+02		
Ce-144	<	2.10E+02			<	2.70E+02			<	2.60E+02		

Nuclide	3-JUL White Perch				3-JUL Yellow Perch				14-OCT Walleye			
Sr-89	<	2.70E+02			<	2.80E+02			<	2.50E+02		
Sr-90	<	1.30E+02			<	2.00E+02			<	2.20E+02		
Be-7	<	5.20E+02			<	5.50E+02			<	5.10E+02		
K-40		3.01E+03	+/-	2.40E+02		3.23E+03	+/-	2.70E+02		4.61E+03	+/-	3.00E+02
Mn-54	<	3.60E+01			<	4.30E+01			<	4.20E+01		
Co-58	<	5.20E+01			<	5.90E+01			<	5.90E+01		
Fe-59	<	1.30E+02			<	1.70E+02			<	1.40E+02		
Co-60	<	4.10E+01			<	3.40E+01			<	4.60E+01		
Zn-65	<	1.50E+02			<	1.20E+02			<	1.40E+02		
Zr-95	<	9.50E+01			<	1.00E+02			<	1.20E+02		
Ru-103	<	6.20E+01			<	8.30E+01			<	6.50E+01		
Ru-106	<	3.70E+02			<	4.10E+02			<	4.40E+02		
Cs-134	<	3.60E+01			<	4.30E+01			<	3.90E+01		
Cs-137	<	3.90E+01			<	4.00E+01			<	4.80E+01		
Ba-140	<	5.00E+02			<	5.80E+02			<	3.40E+02		
La-140	<	5.80E+02			<	6.70E+02			<	3.90E+02		
Ce-141	<	1.10E+02			<	2.20E+02			<	1.00E+02		
Ce-144	<	1.80E+02			<	3.20E+02			<	2.10E+02		

FERMI 2
FISH ANALYSIS

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

Nuclide	14-OCT White Bass				14-OCT White Perch				14-OCT Yellow Perch			
Sr-89	<	2.40E+02			<	2.50E+02			<	2.50E+02		
Sr-90	<	2.00E+02			<	2.20E+02			<	2.20E+02		
Be-7	<	6.30E+02			<	3.50E+02			<	4.50E+02		
K-40		4.71E+03	+/-	3.30E+02		2.66E+03	+/-	2.80E+02		3.96E+03	+/-	2.60E+02
Mn-54	<	5.70E+01			<	3.80E+01			<	4.30E+01		
Co-58	<	7.10E+01			<	4.10E+01			<	5.50E+01		
Fe-59	<	1.60E+02			<	1.00E+02			<	1.40E+02		
Co-60	<	4.60E+01			<	3.60E+01			<	4.40E+01		
Zn-65	<	1.80E+02			<	9.60E+01			<	1.30E+02		
Zr-95	<	1.10E+02			<	8.60E+01			<	9.10E+01		
Ru-103	<	9.20E+01			<	5.90E+01			<	6.60E+01		
Ru-106	<	5.10E+02			<	3.70E+02			<	4.00E+02		
Cs-134	<	5.10E+01			<	2.80E+01			<	4.30E+01		
Cs-137	<	5.10E+01			<	4.10E+01			<	4.30E+01		
Ba-140	<	3.80E+02			<	2.90E+02			<	2.80E+02		
La-140	<	4.30E+02			<	3.30E+02			<	3.20E+02		
Ce-141	<	1.50E+02			<	7.80E+01			<	1.10E+02		
Ce-144	<	2.80E+02			<	1.80E+02			<	2.00E+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 2002, missed samples were a result of missing field TLDs, loss of electrical power to sampling equipment, and lack of good growing conditions in a local garden. The following sections list all missed samples, changes and corrective actions during 2002. These missed samples did not have a significant impact on the execution of the REMP.

Direct Radiation Monitoring

All TLDs are placed in the field in inconspicuous locations to minimize the loss of TLDs due to vandalism. During 2002, two hundred sixty-eight (268) TLDs were placed in the field for the REMP program and all but three TLDs were collected and processed. T-11 was found missing during the second quarter collection, T-30 during the third quarter and T-55 was found missing during the fourth quarter. These TLDs were missing as a result of vandalism.

Atmospheric Monitoring

During 2002, two hundred sixty (260) air samples were placed in the field, all but eleven particulate filters and charcoal filters were processed. New sampling equipment has been purchased and will be deployed in 2003. There were no changes to the Atmospheric Monitoring program in 2002.

- API-1 filters collected on 2/5/2002 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.

- API-1 filters collected on 7/2/2002 and 7/9/2002 were not counted due to low volume caused by an equipment failure due to over heating. Sampling equipment was replaced. For this reason the second and third quarter composite samples for this location are considered to be less than representative.

- API-3 filters collected on 3/26/2002 were not counted due to low volume caused by a power failure. The power was restored and sampling equipment was reset. For this reason the first quarter composite sample for this location is considered to be less than representative.

- API-3 filters for 6/11/2002 were not collected due to a power failure. The power was restored and sampling equipment was reset. For this reason the second quarter composite sample for this location is considered to be less than representative.

- API-3 filters for 11/19/2002 were not counted due to low volume caused by a short in the power cord. Sampling equipment was replaced. For this reason the fourth quarter composite sample for this location is considered to be less than representative.

- API-4 filters for 12/17/2002 were not collected due to a power failure. The power was restored and sampling equipment was reset. For this reason the fourth quarter composite sample for this location is considered to be less than representative.

- API-5 filters for 5/22/2002 were not counted due to low volume caused by equipment failure. Sampling equipment was repaired. For this reason the second quarter composite sample for this location is considered to be less than representative.

- API-5 filters for 7/2/2002 were not counted due to low volume caused by a equipment failure. Sampling equipment was replaced. For this reason the second quarter composite sample for this location is considered to be less than representative.

- API-5 filters for 7/9/2002 and 7/16/2002 were not counted due to low volume caused by overheating. Sampling equipment was repaired and reset. For this reason the third quarter composite sample for this location is considered to be less than representative.

Terrestrial Monitoring

During 2002, all scheduled Terrestrial Monitoring samples were collected except at two garden locations. The two garden location were dropped from the REMP program.

Milk Sampling

All scheduled milk samples were collected in 2002.

Garden Sampling

No samples were collected from location FP-7 and FP-3 due to landowners declining to participate in 2002. These two locations have been dropped from the REMP program.

Groundwater Sampling

All scheduled groundwater samples were collected in 2002.

Aquatic Monitoring

During 2002, twenty-four (24) drinking water samples, twenty-five (25) surface water samples, and ten (10) sediment samples were collected. In addition, thirty-one (31) fish samples were collected for the Aquatic Monitoring program. Due to a frozen sample line, one grab surface water sample was collected. There were no changes to the Aquatic Monitoring program during 2002.

Drinking Water Sampling

All scheduled drinking water samples were collected in 2002.

Surface Water Sampling

On November 26, surface water sampler SW-3 was found not operating due to a frozen sample line. A grab sample was taken. For this reason the fourth quarter composite sample is considered less than representative.

Sediment Sampling

All scheduled sediment samples were collected in 2002.

Fish Sampling

All scheduled fish samples were collected in 2002.

Corrections to the 2001 Annual Radiological Environmental Monitoring Report.

Three typos were found in the 2001 annual report after it had been submitted to the NRC. The corrections are as follows:

1. On page C-36, food product location FP-9, swiss chard sample collected on 8/28/2002 should read < 6.00E+01 not < 6.01E+01 for Cs-134.

2. On page C-47, location SW-2 for the fourth quarter, should read < 1.28E+03 not < 1.28E+02 pCi/liter.

3. On page D-2, API-5 should read collected on 11/6/2001 not 10/30/2001 the sample start date.

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.

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 2002.

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 (µCi/cc) for individual samples, and indicate that the nuclide in question was not detected in gaseous effluent samples in the indicated quarter of 2002. 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	<3.6E-13	1.69E-04	9.67E-04	<3.6E-13
Mn-54	<3.4E-14	1.14E-04	2.55E-04	2.57E-06
Co-58	<2.7E-14	4.35E-04	1.08E-03	2.64E-06
Co-60	9.10E-06	3.12E-04	6.50E-04	8.95E-06
Fe-59	<2.3E-14	<2.3E-14	5.14E-06	<2.3E-14
Zn-65	<1.0E-13	3.83E-04	9.44E-04	<1.0E-13
Zn-69m	<3.3E-13	3.61E-03	1.01E-02	<3.3E-13
Na-24	1.60E-05	4.44E-03	1.19E-02	<4.8E-13
Mo-99	<4.9E-13	2.76E-04	1.30E-03	<4.9E-13
Tc-99m	<5.8E-13	3.72E-03	1.11E-02	<5.8E-13
Ba-139	3.13E-01	2.66E-01	1.83E-01	3.59E-01
La-140	3.08E-04	5.13E-04	8.94E-04	1.49E-04
Ba-140	2.11E-04	2.64E-04	4.96E-04	6.14E-05
Y-91m	2.58E-02	6.64E-02	1.78E-01	1.34E-02
Sr-91	1.88E-03	4.04E-03	6.47E-03	5.24E-04
Sr-92	<1.10E-12	4.71E-03	1.10E-02	<1.10E-12
Rb-89	4.53E-01	3.67E-01	2.66E-02	3.47E-01
Cs-138	2.46E-01	1.81E-01	1.26E-01	2.51E-01
Re-188	<1.1E-12	1.46E-03	4.74E-03	<1.1E-12
Mn-56	<1.6E-11	<1.6E-11	5.20E-03	<1.6E-11
As-76	2.41E-02	5.01E-03	6.58E-03	3.68E-03
Br-82	2.97E-05	8.56E-05	5.47E-05	7.31E-05
Hf-181	2.90E-06	<4.4E-14	<4.4E-14	<4.4E-14
Sr-89	1.16E-04	1.24E-04	1.24E-04	5.39E-05
Sr-90	<1.7E-14	<1.7E-14	<1.7E-14	<1.7E-14
Cs-134	<5.5E-14	<5.5E-14	<5.5E-14	<5.5E-14
Cs-137	<6.3E-14	<6.3E-14	<6.3E-14	<6.3E-14
Ce-141	<1.1E-13	<1.1E-13	<1.1E-13	<1.1E-13
Ce-143	<6.3E-13	<6.3E-13	<6.3E-13	<6.3E-13
Ce-144	<4.8E-13	<4.8E-13	<4.8E-13	<4.8E-13
Total	**1.06E+00**	**9.10E-01**	**5.87E-01**	**9.75E-01**

B. Noble Gases

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Xe-133	<6.5E-08	<6.5E-08	<6.5E-08	<6.5E-08
Xe-135	<2.0E-08	<2.0E-08	<2.0E-08	<2.0E-08
Xe-135m	<2.7E-08	<2.7E-08	<2.7E-08	<2.7E-08
Xe-138	<1.8E-07	<1.8E-07	<1.8E-07	<1.8E-07
Total	**<3.0E-07**	**<3.0E-07**	**<3.0E-07**	**<3.0E-07**

C. Radioiodines

Nuclide	Quarter 1	Quarter 2	Quarter 3	Quarter 4
I-131	1.77E-03	2.26E-03	2.43E-03	2.82E-03
I-132	1.42E-02	2.07E-02	2.24E-02	1.78E-02
I-133	1.05E-02	1.53E-02	1.72E-02	1.26E-02
I-134	2.02E-02	5.55E-02	4.71E-02	2.06E-02
I-135	1.34E-02	2.14E-02	2.95E-02	1.76E-02
Total	**6.01E-02**	**1.15E-01**	**1.19E-01**	**7.14E-02**

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 or at the Envirocare, UT, facility in 2002.

a. **Spent resins, sludges, etc.** Waste in this category in 2002 consisted of spent resins only. All spent resin waste shipped for disposal in 2002 was shipped in High Integrity Containers or Polyethylene Liners to the Barnwell, SC, disposal facility. All waste in this category was Class A waste. All quantities were determined by measurement.

Radionuclide	Total Activity (mCi)	Percent of Total Activity
C-14	4.41E+03	7.68%
Co-58	9.83E+02	1.71%
Co-60	1.89E+04	32.91%
Cr-51	3.05E+02	0.53%
Cs-134	1.80E+01	0.03%
Cs-137	5.74E+02	1.00%
Fe-55	1.86E+04	32.47%
Fe-59	3.95E+01	0.07%
H-3	1.12E+02	0.19%
Hf-181	7.03E+00	0.01%
I-129	1.16E-01	0.00%
Mn-54	5.47E+03	9.52%
Nb-95	3.11E+00	0.01%
Ni-63	7.18E+02	1.25%
Sr-89	3.44E+03	6.00%

Sr-90	1.98E+02	0.34%
Tc-99	2.79E+02	0.49%
Zn-65	3.32E+03	5.79%
Totals	5.74E+04	100.00%

b. Dry compressible waste, contaminated equipment, etc. Waste in this category in 2002 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	1.89E-01	0.02%
C-14	4.83E+00	0.43%
Ce-141	9.41E-02	0.01%
Ce-144	1.09E+00	0.10%
Co-57	9.92E-03	0.00%
Co-58	8.30E+00	0.74%
Co-60	2.29E+02	20.43%
Cr-51	7.86E+01	7.01%
Cs-134	1.56E+00	0.14%
Cs-137	9.03E+00	0.81%
Fe-55	6.67E+02	59.53%
Fe-59	1.75E+00	0.16%
H-3	4.10E+01	3.65%
Hf-181	6.96E-01	0.06%
I-129	3.35E-01	0.03%
Mn-54	3.07E+01	2.74%
Nb-95	6.31E-01	0.06%
Ni-59	3.44E-03	0.00%
Ni-63	1.30E+01	1.16%
Ru-103	3.39E-02	0.00%
Sb-124	1.65E-01	0.01%
Sn-113	1.21E-02	0.00%
Sr-89	2.48E-03	0.00%
Tc-99	1.27E+01	1.13%
Zn-65	1.95E+01	1.74%
Zr-95	3.80E-01	0.03%
Totals	1.12E+03	100.00%

c. Irradiated components, control rods, etc. No waste in this category was shipped.

d. Other No waste in this category was shipped to a disposal site.

Appendix F

Interlaboratory Comparison Data

Interlaboratory Comparison Program for 2002

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 2002, Framatome ANP performed eighty-seven (87) analyses of environmental samples from Analytics. All but one 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 Framatome ANP are described in the foot notes.

ANALYTICS CROSS CHECK COMPARISON PROGRAM 2002

Table F-1

Media	Nuclide	Framatome ANP Result(a)	Analytics Result	Ratio(b)
Water	H-3	13510	14060	0.96
Filter	Gr,Alpha	14	16	0.88
Filter	Gr,Beta	50	48	1.04
Filter	Sr-89	66	82	0.80
Filter	Sr-90	54	61	0.89
Milk	I-131	62	61	1.02
Milk	Ce-141	384	379	1.01
Milk	Cr-51	527	497	1.06
Milk	Cs-134	198	199	0.99
Milk	Cs-137	325	318	1 02
Milk	Co-58	94	90	1.04
Milk	Mn-54	158	149	1.06
Milk	Fe-59	109	102	1.07
Milk	Zn-65	231	206	1.12
Milk	Co-60	353	353	1.00
Milk	I-131LL	99	90	1.09
Milk	Ce-141	32	29	1.10
Milk	Cr-51	262	241	1.09
Milk	Cs-134	103	110	0.94
Milk	Cs-137	248	240	1.03
Milk	Mn-54	224	202	1.11
Milk	Fe-59	112	104	1.08
Milk	Zn-65	215	199	1.08
Milk	Co-60	144	142	1.01
Charcoal	I-131	74	77	0.96
Charcoal	I-131	65	69	0.94
Charcoal	I-131	91	87	1.05
Water	Gr Alpha	56 7	53	1.08
Water	Gr Beta	310.3	313	0.99
Water	I-131	54 5	61	0.90
Water	I-131LL	63.4	61	1.04
Water	Ce-141	239 4	242	0.99
Water	Cr-51	175 7	198	0.89
Water	Cs-134	87.8	91	0.97
Water	Cs-137	197.7	197	1.01
Water	Mn-54	168.5	166	1.02
Water	Fe-59	87.6	86	1.02
Water	Zn-65	157.2	164	0.96
Water	Co-60	114.6	117	0.98
Soil	Ce-141	350.7	383	0 92
Soil	Cr-51	274	314	0 87
Soil	Cs-134	136.6	143	0 96
Soil	Cs-137	405.7	439	0.92

ANALYTICS CROSS CHECK COMPARISON PROGRAM 2002

Table F-1 (cont.)

Media	Nuclide	Framatome ANP Result(a)	Analytics Result	Ratio(b)	
Soil	Mn-54	245.8	263	0.94	
Soil	Fe-59	140.2	136	1.03	
Soil	Zn-65	248.1	259	0.96	
Soil	Co-60	168.1	185	0.91	
Filter	Gr Alpha	21.8	23	0.96	
Filter	Gr Beta	149	136	1.1	
Milk	I-131	87.9	92	0.96	
Milk	I-131LL	93	92	1.01	
Milk	Ce-141	317.8	326	0.98	
Milk	Cr-51	277	267	1.04	
Milk	Cs-134	119	122	0.98	
Milk	Cs-137	271.2	266	1.02	
Milk	Mn-54	231.2	224	1.03	
Milk	Fe-59	123.6	116	1.07	
Milk	Zn-65	225.9	221	1.02	
Milk	Co-60	152.9	158	0.97	
Milk	Sr-89	79.9	83	0.96	
Milk	Sr-90	24.7	27	0.93	
Water	H-3	6970	6970	1.00	
Water	Sr-89	42	64	0.66	(c)
Water	Sr-90	36	39	0.92	
Filter	Gr Alpha				(d)
Filter	Gr Beta				(d)
Filter	Ce-141	59	61	0.97	
Filter	Cr-51	165	160	1.03	
Filter	Cs-134	77	82	0.94	
Filter	Cs-137	64	62	1.03	
Filter	Co-58	68	68	1.00	
Filter	Mn-54	69	65	1.06	
Filter	Fe-59	62	55	1.13	
Filter	Zn-65	131	122	1.07	
Filter	Co-60	82	85	0.96	
Filter	Sr-90	41	48	0.85	
Milk	I-131	88	87	1.01	
Milk	I-131LL	85	87	0.98	
Milk	Ce-141	86	90	0.96	
Milk	Cr-51	230	235	0.98	
Milk	Cs-134	121	120	1.01	
Milk	Cs-137	89	91	0.98	
Milk	Co-58	100	100	1.00	
Milk	Mn-54	97	95	1.02	
Milk	Fe-59	83	81	1.02	
Milk	Zn-65	179	180	0.99	
Milk	Co-60	127	125	1.02	

Footnotes:

(a) *Framatome ANP Results - Units are pCi/liter for water, soil, and milk. Units are total pCi for air particulate filters.*
(b) *Ratio of Framatome ANP to Analytics Results.*
(c) *Sr-89 failed low, investigation ongoing*
(d) *Filter damaged during sample preparation. No results issued.*

Appendix G

Meteorological Data

Fermi 2 Joint Frequency Distribution Tables - 2002

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*
0 *to* 0.75																
0 76 *to* 2.5	3	1	2			1	2	1			2	5	8	2	5	
2.51 *to* 4 5	1	2	3	4	2	4	6	3	6	2	8	24	32	35	19	8
4 51 *to* 6 5	5	9	23	9	11	42	46	20	19	16	25	31	39	32	32	10
6 51 *to* 8.5	13	13	32	32	23	58	53	37	19	17	42	43	22	37	28	17
8.51 *to* 11.5	13	6	5	25	22	26	19	29	25	37	55	57	30	27	16	26
11 51 *to* 14 5	7	3		12	21	8	2	3	3	16	31	12	16	9	6	9
14 51 *to* 18.5	3			2	9	1				6	11	4	3	1		2
18.51 *to* 23 5										1	1					
Total	45	34	65	84	88	140	128	93	72	95	175	176	150	143	106	72

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*
0 *to* 0 75																
0.76 *to* 2 5		2	1	1						1		1	9	3	1	
2 51 *to* 4.5	3	3	3	3	2	4	6	2		9	5	11	8	10	14	6
4.51 *to* 6 5	4	3	6	4	3	12	17	19	7	11	15	18	10	17	10	10
6 51 *to* 8 5	5	5	4	8	5	8	11	20	7	14	17	13	7	8	4	7
8 51 *to* 11.5	3		4	4	2	2	4	4	4	17	24	4	9	6	2	4
11 51 *to* 14 5		3	1	1	1	1				4	6	1	5	1		1
14.51 *to* 18.5			2	3	2					1	4		1	1		
18.51 *to* 23 5																
Total	15	16	21	24	15	27	38	45	18	57	71	48	49	46	31	28

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*
0 *to* 0.75																
0 76 *to* 2.5		4		1					3	2	1	6	5	3	2	4
2.51 *to* 4 5	4	8	3	2	2	7	2	2	4	9	7	20	13	22	14	9
4 51 *to* 6 5	3	4	6	3	5	9	15	13	10	15	18	14	14	15	8	13
6 51 *to* 8.5	9	5	13	7	6	8	8	11	9	15	28	5	10	22	10	10
8.51 *to* 11 5	12	7	2	3	8	3	2	2	1	34	31	4	7	8	6	1
11 51 *to* 14.5	1	4	3	4	6	3	2	1	1	13	21	2	5	4		2
14.51 *to* 18 5			1	5	1					1	11			1	1	
18 51 *to* 23 5																
Total	**29**	**32**	**28**	**25**	**28**	**30**	**29**	**29**	**28**	**89**	**117**	**51**	**54**	**75**	**41**	**39**

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*
0 *to* 0 75								1								
0.76 *to* 2 5	14	6	10	2	2	4	2	2		5	7	13	20	8	13	8
2 51 *to* 4.5	18	27	16	9	17	9	8	8	12	14	47	55	40	41	40	24
4 51 *to* 6.5	26	34	34	14	15	32	21	14	25	36	101	51	50	36	57	50
6 51 *to* 8 5	19	17	58	37	28	26	38	20	36	44	103	44	32	36	27	48
8 51 *to* 11.5	31	22	87	62	47	13	15	28	21	108	133	24	18	23	9	23
11.51 *to* 14.5	10	29	25	19	30	4		3	4	36	81	11	6	6	4	12
14 51 *to* 18 5	5	2	1	2	10	2				9	19	9		1		1
18 51 *to* 23 5					6		1				1	4				
Total	**123**	**137**	**231**	**145**	**155**	**90**	**85**	**76**	**98**	**252**	**492**	**211**	**166**	**151**	**150**	**166**

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*
0	*to*	0.75			1								1	1				
0.76	*to*	2 5	11	5	9	9	3	7	6	5	16	11	24	39	37	34	21	14
2.51	*to*	4.5	26	37	8	11	10	12	15	21	38	46	91	86	45	44	56	37
4 51	*to*	6 5	24	29	38	19	18	36	34	34	41	91	55	22	21	20	15	25
6 51	*to*	8.5	13	23	31	23	22	33	31	36	49	133	31	15	4	5	1	9
8 51	*to*	11.5	10	11	4	1	14	8	12	19	34	92	19	2	2		2	6
11.51	*to*	14.5		2	3	3	5	1	2	5	11	23	13	1				
14.51	*to*	18 5	2	1		1	2	1			3	1						
18.51	*to*	23 5					1			1	1	1						
Total			**86**	**108**	**94**	**67**	**75**	**98**	**100**	**121**	**193**	**398**	**234**	**166**	**109**	**103**	**95**	**91**

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*
0 *to* 0.75	1						1	1	1	1			1	1	1	2
0.76 *to* 2.5	6	4	2	1	2	2	2	9	17	20	26	43	34	47	34	15
2 51 *to* 4 5	22	8	2		1	3	5	13	10	34	23	22	12	21	11	18
4.51 *to* 6.5	14	6	1	1	1	4	13	13	13	17	1			1		2
6 51 *to* 8 5					3	6	6	11	9	17	2					
8 51 *to* 11.5					1		6	10	7	19	2					
11.51 *to* 14 5							1	2	1	4						
14 51 *to* 18 5								1								
18 51 *to* 23.5																
Total	43	18	5	2	8	15	34	60	58	112	54	65	47	70	46	37

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*
0 *to* 0.75												1				
0.76 *to* 2.5	1	3		1			1	1	2	3	4	16	31	50	17	19
2.51 *to* 4.5	14							1	3	7	4	6	6	29	8	12
4.51 *to* 6 5	6					3	3	1		3						2
6 51 *to* 8 5						1	1	1	1	1	1					
8 51 *to* 11 5						3		5		2						
11.51 *to* 14 5								3								
14 51 *to* 18.5																
18.51 *to* 23.5																
Total	21	3		1		7	5	12	6	16	9	23	37	79	25	33

2002 Wind Rose

All Stability Classes

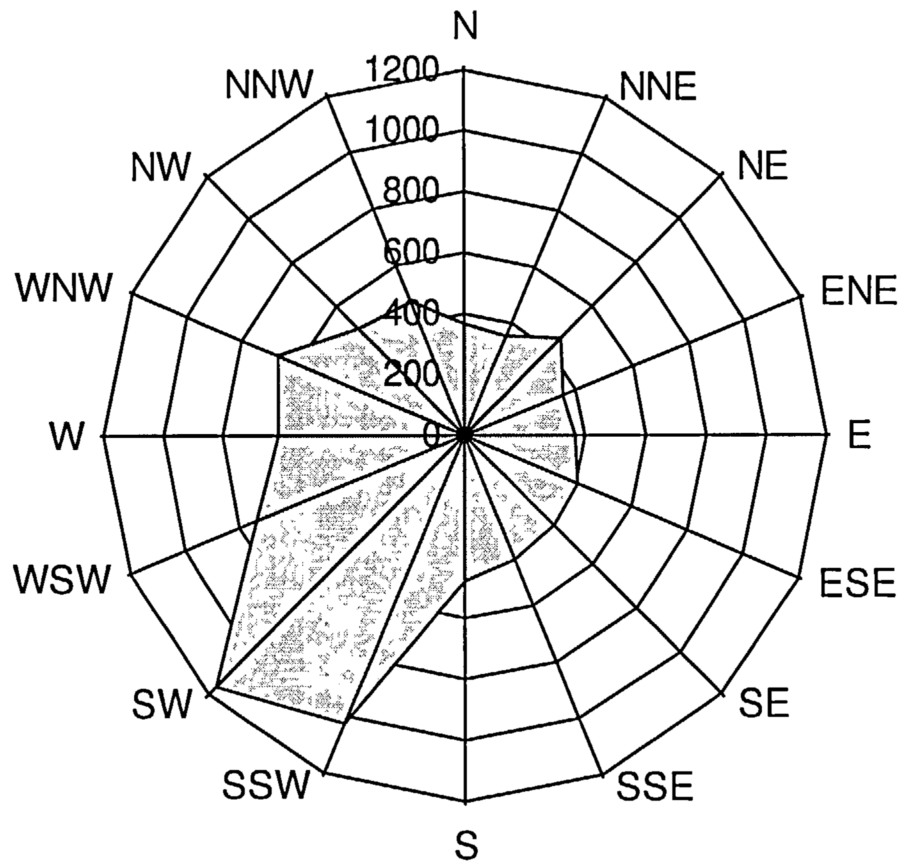


Figure 7

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

Appendix H

ODCM Revision

Rev. 15

LICENSING CHANGE REQUEST

LCR | 0 | 2 | - | 0 | 2 | 3 | - | 0 | D | M |

Revision 0 Page 1 of 1

PART 1: UFSAR, TRM, PLAN, OR PROGRAM REVISION ☐ NA				
A) Document Offsite Dose Calculation Manual				
B) Section(s), Table(s), Figure(s), etc. Affected 4.0.3, Control 3.3.7.12, Table 3.12.1-1, 7.1.2, and Equations 7-11 and 7-14				
C) Reason for Change Conform to Technical Specification Amendment 145, take actions required by CARD 00-20701 and CARD 00-11758, and miscellaneous corrections.				
D) Source References and Other Reference (Identify):	Source Reference	Other Reference	E) Attached Documents (If Applicable)	
EDP	☐	☐	Effectiveness Review	☒ Yes ☐ No
TSR	☐	☐	Commitment Review	☒ Yes ☐ No
DER/CARD	☒	☐	Applicability Determination (required)	
Test	☐	☐	10 CFR 50 59 Screen	☐ Yes ☒ No
Tech Spec	☒	☐	10 CFR 50 59 Evaluation	☐ Yes ☒ No
Temp Mod	☐	☐		
Procedure	☐	☐		
Other	☐	☐	Document Revs. (MLS08007)	☐ Yes ☒ No ☐ NA
F) Drawing Numbers: (list)				

PART 2: OPERATING LICENSE CHANGES ☒ NA	
A) Document ☐ Operating License ☐ Tech Specs ☐ Environmental Protection Plan	
B) Section(s), Table(s), Figure(s), etc. Affected	
C) Reference and Source Documents Attached ☐ NA ☐ Other ☐ Marked-up pages ☐ Significant Hazards Consideration ☐ Environmental Evaluation ☐ Environmental Impact/Categorical Exclusion ☐ Justification	
D) Is change to UFSAR, TRM, and/or approved plans/programs required? ☐ Yes ☐ No ☐ LCR No(s)	
E) Priority ☐ NA NRC approval required by (date): ______ Explanation	~~LCR RECEIVED~~ NUCLEAR LICENSING MAR 05 2002
F) NRC Letter No.	G) Amendment No.

PART 3: APPROVALS	
A) Originator Thomas J. VanderMey	Date 2-27-02
B) Technical Expert Daniel T. Craine	Date 2/28/02
C) Responsible Supervisor or Organizational Unit Head ~~[signature]~~ Dave Williams (Rev 3/6/02)	Date 3/1/02
D) Other NA	Date
E) Director, Nuclear Licensing ☐ Attach Management Review Sheet	Date 3/6/02
F) OSRO (Fire Protection, RERP, PCP, ODCM, SEP, TS) ☐ NA ☐ Attach Management Review Sheet	Date 3/20/02
G) Plant Manager ☐ NA ☐ Attach Management Review Sheet	Date 3/20/02
H) Vice President, Nuclear Generation (QA only) ☒ NA	Date
I) NSRG (OL, TS, EPP) ☒ NA ☐ Attach Management Review Sheet	Date

EFFECTIVENESS REVIEW

Reference LCR | 0 | 2 | - | 0 | 2 | 3 | - | O | D | M |

Revision 0 Page 1 of 3

PART 1: UFSAR ☒ NA

A) Quality Assurance Program

☐ Yes ☐ No ☐ NA — Does the change(s) cease to satisfy the criteria of 10CFR50, Appendix B or reduce UFSAR program commitments previously accepted by the NRC?

☐ Yes ☐ No ☐ NA — Can an exception be taken in accordance with NRC "Final Rule/ 64FR9029" (see MLS08)? If Yes, then NRC prior approval is not required

Provide the basis for each change on MLS08003

B) Fire Protection Program

☐ Yes ☐ No ☐ NA — Does the change(s) adversely affect the ability to achieve and maintain safe shutdown in the event of a fire?

Provide the basis for each change on MLS08003.

PART 2: RADIOLOGICAL EMERGENCY RESPONSE PREPAREDNESS PLAN ☒ NA

A) ☐ Yes ☐ No — Does the change(s) decrease the effectiveness of the RERP Plan?

☐ Yes ☐ No — Does the RERP Plan, as changed, cease to meet the standards of 10CFR50 47(b) and 10CFR50 Appendix E?

Provide the basis for each change on MLS08003.

PART 3: SECURITY PLANS ☒ NA

A) Document

B) ☐ Yes ☐ No — Does the change(s) decrease the effectiveness of the Physical Security Plan or Security Personnel Training and Qualification Plan prepared pursuant to 10CFR50 34(c) or 10CFR73?

☐ Yes ☐ No — Does the change(s) decrease the effectiveness of the first four categories of Informational Background, Generic Planning Base, Licensee Planning Base, and/or responsiblity matrix of the Safeguards Contingency Plan prepared pursuant to 10CFR50.34(d) or 10CFR73?

Provide the basis for each change on MLS08003.

PART 4: PROCESS CONTROL PROGRAM ☒ NA

A) ☐ Yes ☐ No — Does the change(s) reduce the overall conformance of the solidified waste product required by 10CFR61.55 and 10CFR61.56?

Provide the basis for each change on MLS08003.

PART 5: ODCM ☐ NA

A) ☐ Yes ☒ No — Does the change(s) reduce the level of radioactive effluent control required by 10CFR20.106 or 10CFR20.1302, 40CFR Part 190, 10CFR50 36a, and Appendix I to 10CFR Part 50? (Technical Specification 5.5.1)

☐ Yes ☒ No — Does the change(s) adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations? (Technical Specifications 5.5 1)

Provide the basis for each change on MLS08003.

PART 6: APPROVALS

A) Originator Thomas J. VanderMey	Date	2-27-02
B) Technical Expert Daniel T Craine / [signature]	Date	2/28/02
C) Quality Assurance (Security Plans, QA Program) NA	Date	

EFFECTIVENESS REVIEW DOCUMENTATION

Reference LCR | 0 2 - | 0 | 2 | 3 | - | O | D | M |

Revision 0

Document
Listed below is each change by section and page, the reason for the change, and the basis for concluding that the revised plan or program continues to satisfy the criteria for that plan or program. Attach all appropriate analyses or evaluations justifying the change(s).

Section/Page	*Change*	*Basis*
3.0 / 3-4	In section 4.0.3, substitute "greater" for "less" in statement on when to declare a Control not met. Add statement requiring a risk evaluation for some missed surveillances.	This conforms the ODCM to Technical Specification Amendment 145. This is an administrative change which does not affect regulatory compliance or ODCM calculations.
3.0 / 3-10	Separate sentences in Action b of Control 3.3.7.12, and renumber accordingly. Change Applicability of second sentence, now Action c, and last action statement, now Action d, to "at all times".	Under current revision, Action b may be interpreted as not requiring repair of standby gas treatment system gaseous effluent monitoring instrumentation unless the SGTS is operating. The proposed change clarifies that such repair is required whenever this instrumentation is not functionally capable. This change enhances effluent control since it requires timely repair of the SGTS effluent instrumentation. This change is required under the action plan for CARD 00-20701. Regulatory compliance and ODCM calculations are not affected.
3.0 / 3-35	In item 2 of Table 3.12.1-1, change "D/Q" to "X/Q" under the description of locations a and b.	This change clarifies that the X/Q, not the D/Q, should be considered in choosing offsite airborne sampling locations. This is an administrative correction which does not affect regulatory compliance or ODCM calculations.
7.0 / 7-2	In section 7.1.2, change Technical Specification reference to offgas system hydrogen monitor to current Technical Requirements Manual references, and correct noble gas activity monitor Technical Specification reference.	This change implements the required action specified in CARD 00-11758. This is an administrative change to monitor descriptions, and as such it does not affect regulatory compliance or ODCM calculations.

EFFECTIVENESS REVIEW DOCUMENTATION

Reference LCR | 0 | 2 | - | 0 | 2 | 3 | - | O | D | M |

Revision 0

7.0 / 7-13 and 7-14	In equations 7-11 and 7-14, add missing parenthesis at end of equation.	This correction is necessary because of a difference between the electronic and printed version of this section. The use of these equations has not been affected and this change is strictly administrative. As such, it does not affect regulatory compliance or ODCM calculations.

FERMI 2 - TECHNICAL REQUIREMENTS MANUAL

VOLUME II – LIST OF EFFECTIVE PAGES

OFFSITE DOSE CALCULATION MANUAL

Page	Revision	Page	Revision
0-1	15	3-15	13
0-2	13	3-16	13
0-3	13	3-17	13
0-4	13	3-18	14
0-5	13	3-19	13
0-6	13	3-20	14
		3-21	14
1-1	13	3-22	14
1-2	14	3-23	13
		3-24	13
2-1	13	3-25	13
2-2	14	3-26	14
2-3	14	3-27	14
2-4	14	3-28	14
2-5	14	3-29	14
2-6	14	3-30	14
2-7	14	3-31	13
		3-32	14
3-1	13	3-33	14
3-2	14	3-34	13
3-3	14	3-35	14
3-4	15	3-36	13
3-5	13	3-37	13
3-6	14	3-38	13
3-7	14	3-39	13
3-8	14	3-40	13
3-9	13	3-41	13
3-10	14	3-42	13
3-11	13	3-43	13
3-12	13	3-44	13
3-13	13	3-45	13
3-14	13	3-46	13

FERMI 2 - TECHNICAL REQUIREMENTS MANUAL

VOLUME II – LIST OF EFFECTIVE PAGES

OFFSITE DOSE CALCULATION MANUAL

Page	Revision	Page	Revision
4-1	13	6-19	13
4-2	13	6-20	13
4-3	13	6-21	13
4-4	13	6-22	13
4-5	13		
4-6	13		
4-7	13	7-1	13
4-8	13	7-2	14
		7-3	13
5-1	13	7-4	14
5-2	13	7-5	13
5-3	13	7-6	13
5-4	14	7-7	13
5-5	13	7-8	13
		7-9	13
6-1	13	7-10	13
6-2	13	7-11	13
6-3	14	7-12	14
6-4	13	7-13	14
6-5	13	7-14	14
6-6	13	7-15	13
6-7	14	7-16	13
6-8	14	7-17	13
6-9	13	7-18	13
6-10	13	7-19	13
6-11	13	7-20	13
6-12	13	7-21	13
6-13	13	7-22	13
6-14	13	7-23	13
6-15	13	7-24	13
6-16	13	7-25	13
6-17	13	7-26	13
6-18	13		

FERMI 2 - TECHNICAL REQUIREMENTS MANUAL

VOLUME II – LIST OF EFFECTIVE PAGES

OFFSITE DOSE CALCULATION MANUAL

Page	Revision	Page	Revision
7-27	13	9-1	13
7-28	13	9-2	13
7-29	13	9-3	13
7-30	13	9-4	13
7-31	13		
7-32	13	10-1	13
7-33	13	10-2	13
7-34	13	10-3	13
7-35	13	10-4	13
7-36	13	10-5	13
7-37	13	10-6	13
7-38	13	10-7	13
7-39	13	10-8	13
7-40	13	10-9	13
7-41	13	10-10	13
7-42	13	10-11	13
7-43	13	10-12	13
7-44	13	10-13	13
7-45	13	10-14	13
7-46	13	10-15	13
7-47	13		
7-48	13		
7-49	13		
7-50	13		
8.0-1	13		
8.0-2	13		
8.0-3	13		
8.0-4	13		
8.0-5	13		
8.0-6	13		
8.0-7	13		
8.0-8	13		
8.0-9	13		

OFFSITE DOSE CALCULATION MANUAL

Pages Revised in Latest Revision

0-1, 3-4, 3-10, 3-35, 7-2, 7-13, and 7-14

Implementation Plan

These revisions go into effect concurrently with implementation of Technical Specification Amendment 145

Information and Procedures				
DSN TRM VOL II	Revision 15	Change # 02-023-ODM	DTC TMTRM	File # 1754
IP Code I	Date Approved 3/20/02	Released By NA	Date Issued 3-22-02	Recipient 3602

3/4.0 APPLICABILITY

SURVEILLANCE REQUIREMENTS

4.0 1 Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Controls, unless otherwise stated in the Surveillance Requirements Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the Control. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the Control except as provided in Surveillance Requirement 4.0.3. Surveillances do not have to be performed on equipment which is not FUNCTIONALLY CAPABLE or variables outside specified limits

4.0 2 The specified Frequency is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . " basis, the above Frequency extension applies to each performance after the initial performance

Exceptions to this Control are stated in the individual Controls.

4.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the Control not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

If the Surveillance is not performed within the delay period, the Control must immediately be declared not met, and the applicable ACTIONS must be entered

When the Surveillance is performed within the delay period and the Surveillance is not met, the Control must immediately be declared not met, and the applicable ACTIONS must be entered

4 0 4 Entry into a MODE or other specified condition in the Applicability of a Control shall not be made unless the Control's Surveillances have been met within their specified Frequency This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit

4 0 4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

3 3.7.12 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3 3.7.12-1 shall be FUNCTIONALLY CAPABLE with their alarm/trip setpoints set to ensure that the limits of Control 3 11.2 1 are not exceeded. The alarm/trip setpoints of these channels, with the exception of the offgas monitoring system, shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: Actions a and b As shown in Table 3.3.7.12-1
Actions c and d At all times

ACTION

a With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Control, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel not FUNCTIONALLY CAPABLE, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels FUNCTIONALLY CAPABLE, take the ACTION shown in Table 3.3 7.12-1.

c Restore radioactive gaseous effluent monitoring instrumentation which is not FUNCTIONALLY CAPABLE to FUNCTIONALLY CAPABLE status within 30 days and, if unsuccessful, explain why this condition was not corrected in a timely manner in the next Annual Radioactive Effluent Release Report

d The provisions of Controls 3 0.3 and 3 0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4 3 7 12 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated FUNCTIONALLY CAPABLE by performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4 3 7 12-1

TABLE 3.12.1-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
1. DIRECT RADIATION[b]	67 routine monitoring stations, with two or more dosimeters placed as follows: 1) an inner ring of stations in the general area of the SITE BOUNDARY and additional rings at approximately 2, 5, and 10 miles, with a station in at least every other meteorological sector for each ring with the exception of those sectors over Lake Erie The balance of the stations, 8, should be placed in special interest areas such as population centers, nearby residences, schools, and in 2 or 3 areas to serve as control stations	Quarterly	Gamma dose quarterly
2 AIRBORNE Radioiodine and Particulates	Samples from 5 locations a 3 samples from close to the 3 SITE BOUNDARY locations, in different sectors, of the highest calculated annual average ground level X/Q b 1 sample from the vicinity of a community having the highest calculated annual average ground level X/Q c 1 sample from a control location, as for example 15-30 km distant and in the least prevalent wind direction[c]	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading	<u>Radioiodine Canister</u> I-131 analysis weekly <u>Particulate Sampler:</u> Gross beta radioactivity analysis following filter change [d] Gamma isotopic analysis[e] of composite (by location) quarterly

7.0 GASEOUS EFFLUENTS

7.1 Radiation Monitoring Instrumentation and Controls

7.1.1 Effluent Monitoring - Ventilation System Releases

The gaseous effluent monitoring instrumentation required at Fermi 2 for controlling and monitoring radioactive effluents are specified in ODCM 3.3.7.12. The monitoring of each identified gaseous effluent release point must include the following:

- Noble Gas Activity Monitor
- Iodine Sampler (sample cartridge containing charcoal or silver zeolite)
- Particulate Sampler (filter paper)
- Sampler Flow Rate Monitor

Meeting these requirements, a total of six Eberline SPING Monitoring Systems are installed on the five gaseous release points (Onsite Storage Facility, Radwaste Building, Turbine Building, Reactor Building Exhaust Plenum, and Standby Gas Treatment System Division 1 and Division 2) The SPING Monitor outputs are recorded electronically in the CT-2B Control Terminal in the Main Control Room

In general, a reading exceeding the High alarm setpoint of the SPING Monitors causes an alarm in the Control Room Fermi 2 ODCM Table 3.3.7 12-1 identifies these alarm functions.

7.1.2 Main Condenser Offgas Monitoring

ODCM Table 3 3 7 12-1 and Technical Requirements Manual Volume 1, section TR 3 3 12, specify monitoring requirements for the Offgas System at the 2 2 minute delay line The following monitors are required

- Hydrogen Monitor - used to ensure the hydrogen concentration in the Offgas Treatment System is maintained less than 4% by volume as required by Technical Requirements Manual Volume 1, section TRLCO 3 3 12
- Noble Gas Activity Monitor - used to ensure the gross activity release rate is maintained within 340 millicuries per second after 30 minute decay as required by Technical Specification 3.7.5.

  These two monitors perform safety functions The Hydrogen Monitor monitors the potential explosive mixtures in the Offgas System The Noble Gas Monitor monitors the release rate from the main condenser ensuring doses at the exclusion area boundary will not exceed a small fraction of the limits of 10 CFR 100 in the event this effluent is inadvertently discharged directly to the environment bypassing the Offgas Treatment System

7.8 Noble Gas Effluent Dose Calculations - 10 CFR 50

7.8.1 UNRESTRICTED AREA Dose - Noble Gases

ODCM 4.11.2.2 requires that an assessment of releases of noble gases be performed at least once per 31 days to evaluate compliance with the quarterly dose limits of 5 mrad, gamma-air and 10 mrad, beta-air and the calendar year limits 10 mrad, gamma-air and 20 mrad, beta-air. The following equations may be used to calculate the gamma-air and beta-air doses If noble gases are detected at multiple release points, these equations must be performed for each such release point, and the calculated air doses must be summed.

$$D_\gamma = 3.17E{-}08 * \chi/Q * \sum(M_i * Q_i) \qquad (7\text{-}10)$$

and

$$D_\beta = 3.17E-08 * \chi/Q * \sum(N_i * Q_i) \qquad (7\text{-}11)$$

Where:

D_γ	=	air dose due to gamma emissions for noble gas radionuclides (mrad)
D_β	=	air dose due to beta emissions for noble gas radionuclides (mrad)
χ/Q	=	atmospheric dispersion to the controlling SITE BOUNDARY location (sec/m^3)
Q_i	=	cumulative release of noble gas radionuclide i over the period of interest (μCi)
M_i	=	air dose factor due to gamma emissions from noble gas radionuclide i (mrad/yr per μCi/m^3, from Table 7.0-2)
N_i	=	air dose factor due to beta emissions from noble gas radionuclide i (mrad/yr per μCi/m^3, Table 7 0-2)
3 17 E - 08	=	1/3 15 E + 07 (year/sec)

7.9 Radioiodine and Particulate Dose Calculations - 10 CFR 50

7.9.1 UNRESTRICTED AREA Dose - Radioiodine, Particulates, and Tritium

In accordance with requirements of ODCM 4.11.2.3, a periodic assessment (at least once per 31 days) is required to evaluate compliance with the quarterly dose limit of 7.5 mrem and the calendar year limit of 15 mrem to any organ. The following equation may be used to evaluate the maximum organ dose due to releases of I-131, I-133, tritium, and particulates with half-lives greater than 8 days:

$$D_{ao} = \sum_{p}\sum_{r}\sum_{i}\left(W_r * SF_p * 3.17E-8 * R_{aipo} * Q_{ir}\right) \tag{7-14}$$

Where:

D_{ao} = dose or dose commitment to Organ o of age group a (identified in Table 7.0-3 or plant procedures)

W_r = atmospheric dispersion parameter for release point r and the residence location identified in Table 7.0-3 or plant procedures. Either:

a) χ/Q, atmospheric dispersion for inhalation pathway and H-3 and C-14 dose contribution via other pathways (sec/m^3), or

b) D/Q, atmospheric deposition for vegetation, milk and ground plane exposure pathways (m^{-2})

R_{aipo} = dose factor (mrem/yr per µCi/m^3) or (m^2 - mrem/yr per µCi/sec) from Table 7.0-4 for radionuclide i, age group a, pathway p, and organ o as identified in Table 7.0-3 or plant procedures. Values for R_{aipo} were derived in accordance with the methods described in NUREG-0133 As noted in NUREG-0133 section 5.3 1.3, in the case that the milk animal is a goat, parameter values from Reg Guide 1.109 should be used. For I-131, for example, use of the goat feed/forage consumption rate given in Table E-3 and the stable element transfer factor given in Table E-2 of Reg Guide 1.109 results in grass-goat-milk dose factors which are equivalent to the grass-cow-milk dose factors in Table 7.0-4 multiplied by 1 2