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In-Plant Source Term Measurements at Brunswick Steam Electric Station

Prepared by S. W. Duce, S. T. Croney, D. W. Akers,
T. E. Young, F. B. Simpson, J. W. Mandler

EG&G Idaho, Inc.

Prepared for
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ABSTRACT

This report presents data obtained at Brunswick as a part of the In-Plant Source Term Measurement Program in operating light water reactors (LWRs). The work was conducted for the Office of Nuclear Regulatory Research (RES) in support of the Meteorology and Effluent Treatment Branch (METB) of the Office of Nuclear Reactor Regulation (NRR). The primary objective of this program is to provide the Nuclear Regulatory Commission (NRC) with operational data that can be used in evaluation of plant designs for liquid and gaseous radwaste treatment systems.

Data presented were obtained at the Brunswick Nuclear Generating Station, operated by Carolina Power and Light, located at Southport, North Carolina. In-plant measurements were conducted during the time period from March 1982 to November 1982. This plant is the sixth in a series of operating LWRs to be studied and the first boiling water reactor (BWR) in the series.

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1. INTRODUCTION

1.1 Objectives of the In-Plant Measurement Program

The primary objectives of the In-Plant Source Term Measurement Program at operating light water reactors (LWRs) are to provide the Nuclear Regulatory Commission (NRC) with 1) information and operational data on the processes and operations used for control and treatment of radwaste material, 2) baseline data for NRC evaluation of the operational limits of As Low As Reasonably Achievable (ALARA) as it pertains to effluent releases, 3) operational data that can be used in evaluation of plant designs for liquid and gaseous waste treatment systems (BWR-GALE Code),[1] and 4) data on the transport and behavior of radionuclides and species. This evaluation requires a knowledge of the sources and quantities of radioactive waste materials generated at a nuclear power reactor during normal operation including anticipated operational occurrences, how these sources vary with plant design, the radioisotope inventory in plant systems, how radioactive materials move through plant systems, and radioactive waste treatment system performance.

Specific objectives of the in-plant measurement study are:

1. Obtain data on the inventory of radioisotopes present (i.e., locations, concentrations, etc.) in operating reactor plant systems during normal operation and anticipated operational occurrences.

2. Study radioactive waste treatment system performance and determine decontamination factors (DFs) for evaporators, demineralizers, filters, and gaseous cleanup systems.

3. Obtain data on radioisotope concentrations in fuel pool waters.

4. Determine the releases of radioactive materials in the gaseous and liquid effluents.

5. Estimate annual release of airborne activity from the turbine building ventilation system, radwaste building, reactor buildings and main stack.

6. Provide additional source term information so that the parameters used in calculational models[1] can be updated as necessary.

Measurements are to be made during the three stages of plant operation (i.e., power generation prior to refueling, during refueling operations, and power generation following refueling) so that the data can be used to estimate equipment performance and radioactivity releases over the lifetime of a nuclear power plant.

The In-Plant Source Term Measurement Program is being performed by the Idaho National Engineering Laboratory (INEL), EG&G Idaho, Inc., prime contractor. In-plant measurements were initiated during the summer of 1976. During 1976 and 1977 measurements were made at the Fort Calhoun Station, Blair, Nebraska (operated by Omaha Public Power District)[2] and at the Zion Station, Zion, Illinois (operated by Commonwealth Edison Co.).[3] From November 1977 through June 1978 measurements were made at the Turkey Point Generating Station, Florida City, Florida (operated by Florida Power and Light).[4] From September 1978 through March 1979 measurements were made at the Rancho Seco Nuclear Generating Station, Clay Station, California (operated by the Sacramento Municipal Utility District).[5] From October 1980 through August 1981 measurements were made at the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota (operated by Northern States Power).[6] All of the above reactors are pressurized water reactors (PWRs).

The first complete set of measurements on a boiling water reactor (BWR) were made at the Brunswick Steam Electric Generating Plant from March 1982 through mid-November 1982. This report provides the results of these measurements.

1.2 Brunswick Steam Electric Generating Station

1.2.1 In-Plant Measurements at Brunswick

The measurement program at Brunswick was initiated in February 1982. First, sample points and locations in the liquid and gaseous process streams were selected. This was accomplished by examining the piping and instrument diagrams (P&IDs) to determine where samples should be taken, discussing the proposed sample points with plant personnel, and inspecting the actual systems to verify the practicality of the sample points and locations. Results were used to generate a preliminary measurement plan for the specific studies to be made at Brunswick. The NRC Mobile Laboratory was then moved to Brunswick on March 4, 1982. Actual in-plant measurements began on March 14, 1982.

During the first six weeks of measurements, all of the systems were sampled and the sample points validated. This included a study of each sample point to determine purge times adequate to give a consistent sample. Following this, the preliminary measurement plan was modified to provide the plan[7] which all subsequent sampling would follow.

In-plant measurements at Brunswick spanned the period March 14, 1982 to November 17, 1982. During this seven month period, Unit No. 2 was down for refueling from April 23, 1982 to September 30, 1982. Samples from both liquid and gaseous process streams were collected and analyzed using the procedures described in the source term measurements procedures manual.[8]

1.2.2 Description of the Brunswick Steam Electric Generating Station

The Brunswick Steam Electric Generating Station, operated by Carolina Power and Light Company (CP&L), is located at Southport, North Carolina. Two identical boiling water reactors supplied by General Electric share the site. Each unit has a generating capacity of 2436 MW(t) and a net electrical power output of 790 MWe. Unit No. 1 began commercial operation in March 1977 and Unit No. 2 in November 1975.

Each nuclear unit consists of a boiling water reactor, reactor coolant/main steam system, reactor water cleanup system, spent fuel pool and purification system, and ventilation system, with the liquid radwaste treatment system being common to both units. See Figures 1-1 and 1-2 for simplified schematics of the liquid and gaseous systems respectively. This is the first time that the In-Plant Source Term Measurement Program has studied interactions and radionuclide behavior in a BWR. The Brunswick Plant was selected for study because of its "pump forward" feature.

To facilitate study, the reactor coolant/main steam system was divided into four separate component systems. The component systems are: (a) "reactor vessel" which is from the feedwater inlet lines to the reactor vessel to the high pressure (HP) turbine inlet, (b) the "turbine" which is from the inlet of the HP turbine to the effluent of the condensate pumps, (c) the "condensate cleanup" system which is from the inlet of the condensate filter/demineralizers to the effluent of the condensate deepbed demineralizers, and (d) the "feedwater" which is from the condensate booster pumps to the effluent of the 5A & B reactor feedwater heater and the inlet streams to the pump forward sub-system.

There are two fuel pools located at Brunswick, one in each reactor building. The water in each fuel pool is processed by passing a sidestream of water through: (a) a skimmer surge tank, (b) a heat exchanger, (c) one of the two fuel pool filter/demineralizers, and (d) recirculating the water back to the fuel pool. The filters are composed of precoated powdex resin used for solids removal.

Liquid wastes are collected by either the floor drain collection or waste collection systems. Liquids from both units are mixed in the final collection receiver tanks. These liquids are processed, as dictated by plant water demands, through either filter demins and/or deepbed demineralizers. The processed water is then either reused as reactor feedwater or discharged.

There are five gaseous release pathways to the environment from the Brunswick Station. They are: the Unit No. 1 and No. 2 reactor building ventilation exhausts, the Units No. 1 and No. 2 turbine building exhausts, and the main stack. Particulate (HEPA) and radioiodine filters are located on the exhaust of the turbine building, and the main stack exhaust has a particulate (HEPA) filter unit. The reactor building ventilation exhausts are unfiltered. The augmented gaseous radwaste system for the steam jet air ejectors was inoperable during the in-plant measurement period; however, the condenser air ejector was discharged to the main stack. Dilution

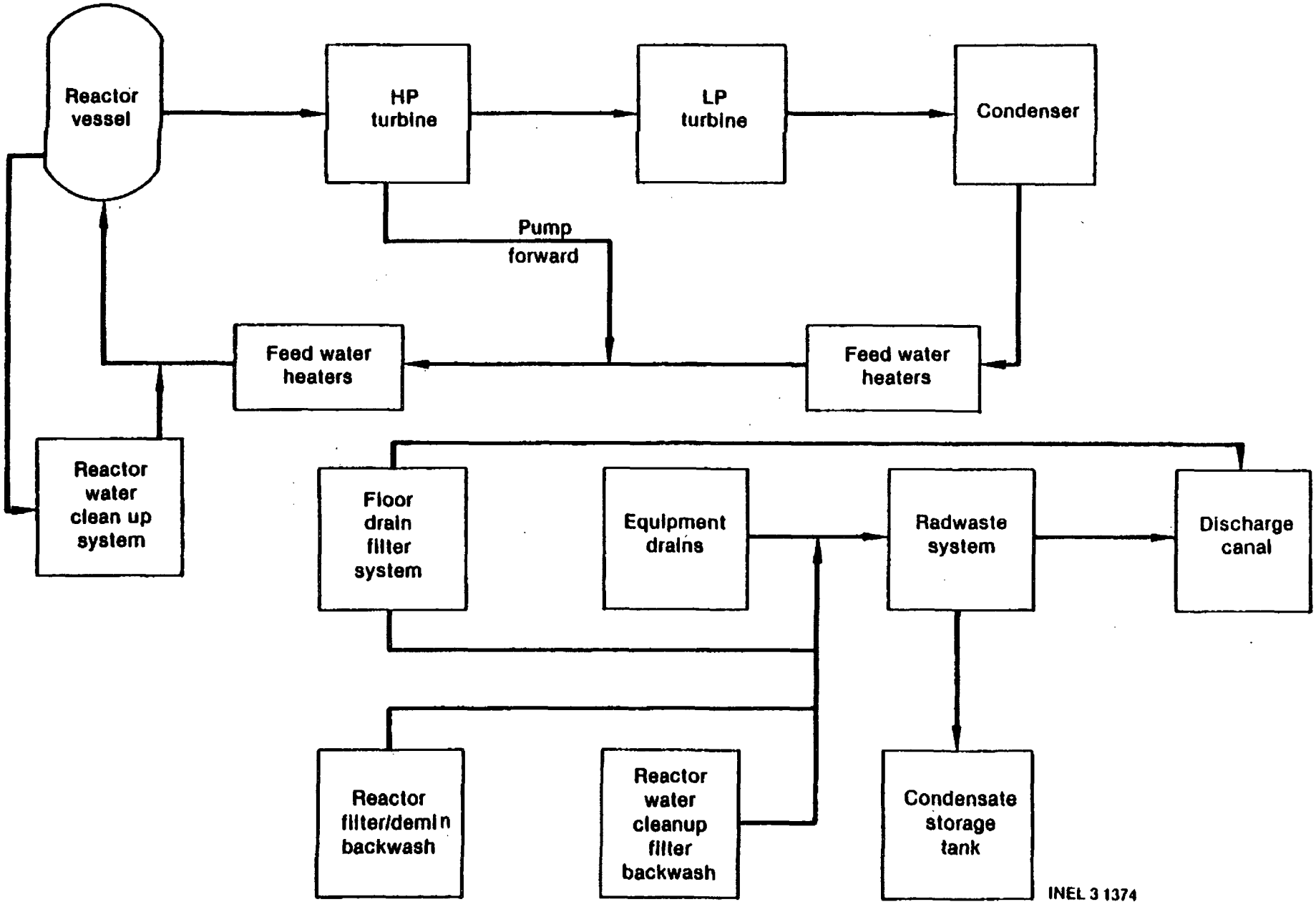


Figure 1-1. Schematic Diagram of Liquid Systems

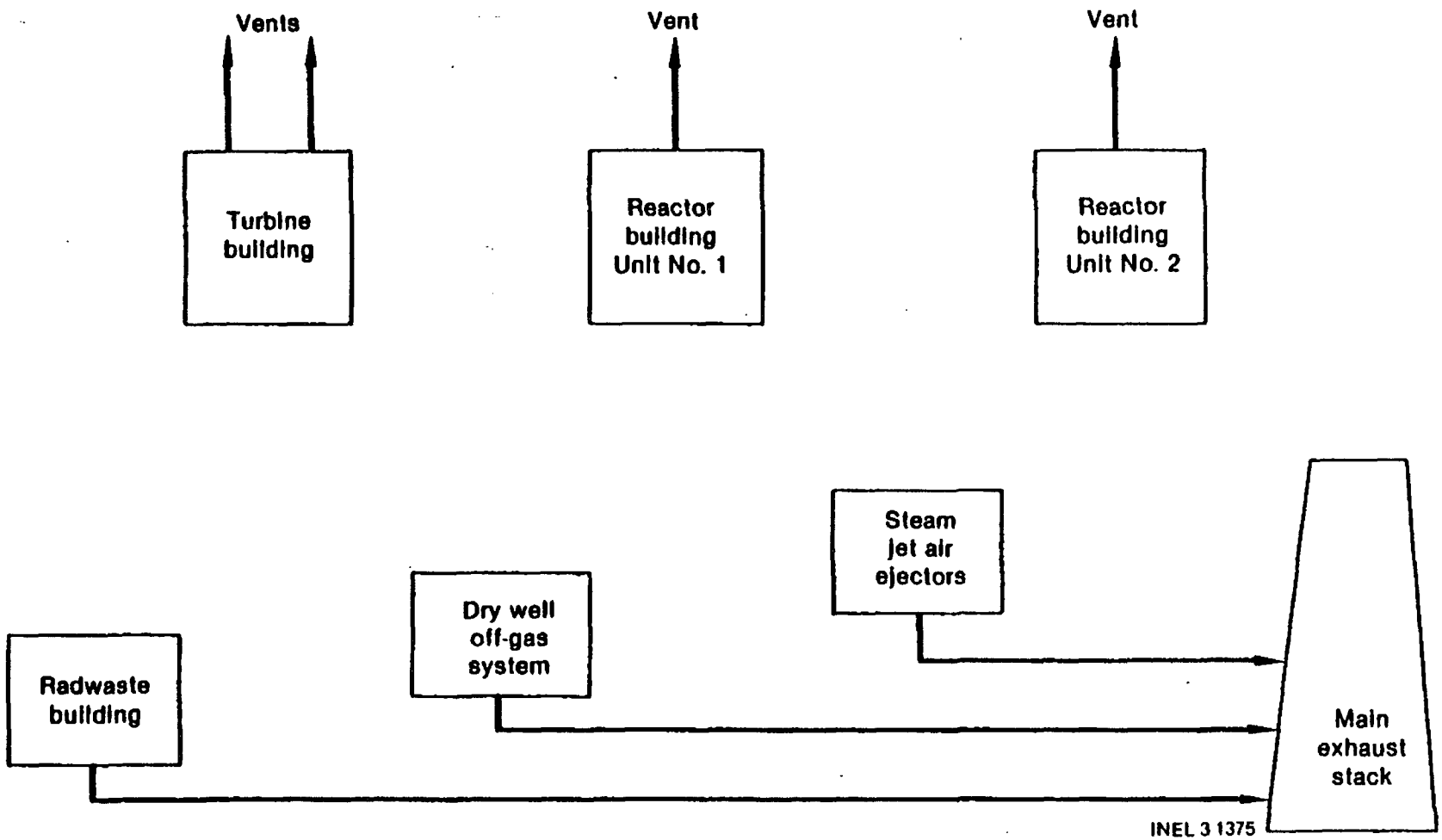


Figure 1-2. Schematic Diagram of Gaseous Systems

air for the main stack comes from the radwaste building ventilation exhaust and the unused augmented off-gas system building.

Each of the subsystems and the data obtained are discussed in detail in the following sections of this report. Sample and data handling procedures are discussed in Appendix A. Appendix B contains the experimental data.

1.2.3 Plant Data

Wherever possible, plant data were collected to supplement the in-plant measurement data and to help interpret the measurements. Plant operational data used to characterize samples included the control room operator logs, chemistry lab logs, control room balance of plant reports, monthly isotopic analysis reports, daily water reports, airborne discharge reports, radwaste operation logs, selected isotopic analysis reports, and discussions with plant personnel.

General information obtained from these logs and reports were power level, system flow rates, operation history of all filter and deepbed demineralizers, operation of the radwaste system, system chemistry, radiochemical analyses, and radioactive gaseous and liquid effluent releases.

The results of radiochemical analyses of reactor coolant samples performed by plant personnel have been included in a few instances in this report to provide a more complete understanding of the phenomena that are being studied. Also for a more complete understanding of the system during the post-refueling period, plant data were used to extend the data base to the end of January 1983.

2. SUMMARY AND CONCLUSIONS

2.1 General Plant Operation During In-Plant Measurement Study

Measurements were conducted at the Brunswick Nuclear Generating Station from March 14, 1982 to November 17, 1982. Unit No. 1 was shut down during the period July 17, 1982 to October 17, 1982. Unit No. 1 experienced other outages from June 2 to 5, 1982 and from October 22 to 26, 1982. It also experienced very short shutdowns on April 20, May 6, June 18, June 28, and July 10, 1982. Figure 3-7 shows the power level history for Unit No. 1 during the in-plant measurement period.

Unit No. 2 was shut down for refueling on April 23, 1982 and did not resume power operations until September 30, 1982. It experienced other outages from October 7 to 15, 1982 and from October 28 to December 4, 1982. The power level history for Unit No. 2 is shown in Figure 3-8.

In order to facilitate measurements and study, the plant was divided into the following basic liquid and gaseous systems:

1. Reactor coolant/main steam
2. Reactor water cleanup
3. Liquid radwaste
4. Spent fuel pool
5. Ventilation exhaust.

Each basic system was itself divided into various subsystems. The systems and subsystems are discussed below with the important conclusions highlighted.

2.2 Reactor Coolant/Main Steam System

2.2.1 Reactor Vessel System

Reactor coolant samples were obtained from both Brunswick Units No. 1 and No. 2 during the period March 15, 1982 to November 13, 1982. During the period July 29, 1982 to September 26, 1982 no sampling was performed as both units were shutdown for an indefinite period. These sampling periods encompassed all three stages of operation for Unit No. 2, refueling and pre- and post-refueling. Unit No. 1 operated at approximately 60-65% power during the sampling period. Figures 3-7 and 3-8 show power level and ^{131}I reactor coolant concentrations for Units No. 1 and No. 2, respectively. All available CP&L data have been included in these figures. The connecting dashed line is not indicative of ^{131}I concentration between sample points but is used only to assist in determining trends. These figures indicate that ^{131}I spiked in both units with power changes as small as 20%. Unit No. 2 spikes were more dramatic than Unit No. 1, particularly at shutdowns.

At shutdown of Unit No. 2, April 23, 1982, reactor coolant samples were obtained more frequently to characterize the shutdown spike. Radioiodines, cesiums, corrosion products, and fission products all spiked during the

shutdown. Table 3.18 lists the spike factors and spike time for the above listed elements. The largest spike factor was 245 for ^{59}Fe. This was followed by ^{103}Ru at 141, ^{134}Cs at 124, ^{137}Cs at 107, and ^{95}Nb at > 100. The largest radioiodine spike was 22.6 for ^{131}I. No spikes were followed in Unit No. 1.

Reactor coolant concentrations were averaged for each unit prior to shutdown and after startup. In Unit No. 1 all values generally agree within a factor of two, which is not considered a significant variation for data after a three month outage. In Unit No. 2 there were no significant differences in pre- and post-refueling concentrations.

Technetium radionuclides were measured in both units. These radionuclides were not observed in any of the PWRs studied, and their appearance in these BWR units may be indicative of reactor coolant chemistry differences. Also, ^{38}Cl was measured in both units which is indicative of sea water intrusion into the condenser hotwell.

Filtered data from both units indicate that the radioiodines and cesiums were largely soluble. The corrosion products, on the other hand, had large but varying particulate fractions (i.e., 20-80%).

Samples of reactor coolant from both units were analyzed for iodine species using a modification of Lin's procedure.[9] Replicate sampling results for Unit No. 1 were highly variable and therefore inconclusive. Sample results for Unit No. 2 indicate that "I^- + other" (i.e., $I^- + CH_3I + I_2$) was the dominant species during power operations; however, IO_3^- became dominant very quickly after shutdown. These observations agree with current thinking on the mechanism of iodine species formation. The highly reducing environment of the reactor core at power favors the formation of I^-; however when the reactor is shut down, the environment becomes oxidative which favors the formation of IO_3^-. This is graphically shown in Figure 3-9.

Steam carryover fractions were determined using ^{24}Na and ^{131}I for both units. As samples of Unit No. 2 main steam were not representative, the main steam values were calculated using the methodology of Section 3.6.1. The carryover fraction measured using ^{24}Na is indicative of steam quality with higher steam quality associated with smaller carryover fractions. Unit No. 1 average carryover fractions were 5.4(-3)% and 1.9(-3)%* during May 5 to June 8, 1982 and October 19, 1982, respectively, which indicates an average steam quality of 99.996% for the total sampling period. Unit No. 2 steam quality was found to be lower than Unit No. 1 with an average steam quality of 99.92% for the total sampling period. Iodine carryover fractions were found to be 4.3 and 4.0% for the two separate

---

* In this report, the number in parentheses following a number represents the power of ten multiplier, e.g., 2.36(4) = 2.36×10^4.

power periods in Unit No. 1 and 1.65% in Unit No. 2. Iodine partition factors, therefore, are 0.041 and 0.016 for Units No. 1 and No. 2, respectively. The higher iodine carryover fraction in Unit No. 1 may be caused by the low (i.e., <0.1 ppb) Cu^{++} concentration in the reactor coolant. Lin[9] has determined a relationship between HOI formation and Cu^{++} concentration which shows that the volatile species is inversely proportional to the Cu^{++} concentration. The measured volatile carryover fraction in Unit No. 1 is in good agreement with the predicted fraction presented by Lin.

Radionuclide concentrations in reactor coolant were predicted for both units using ANSI N237-1976.[10] The predicted values were then compared with the average measured concentrations. With the exception of ^{24}Na, ^{51}Cr, ^{54}Mn, and ^{110m}Ag, which were larger by factors of 1.25 to 10, Unit No. 1 reactor coolant concentrations were lower by factors of 60 to 1000 than the predicted values. The larger ^{24}Na value is probably due to sea water intrusion into the hotwell (see Table 3.14). In Unit No. 2 average reactor coolant concentrations agree within a factor of 5 with calculated values, with a few exceptions (see Table 3.15).

Radionuclide release mode into the coolant was evaluated using the methods of Skarpelos and Gilbert[11] and Mayer.[12] Figure 3-30 plots the result of this evaluation using the radioiodine values in both Unit No. 1 and No. 2. Both release mechanisms were considered to be from recoil. In Unit No. 1 the low radioiodine concentrations imply that the uranium is tramp uranium from fabrication. In Unit No. 2 the high radioiodine concentrations imply that the tramp uranium is from older failed fuel which has plated out on the reactor internals and fuel.

2.2.2 Turbine System

Plant design did not allow for sampling of components within the turbine system; therefore, mass balance calculations were performed to determine radionuclide behavior by sampling inlet and outlet systems. These calculations show very little if any removal in the high pressure (HP) and low pressure (LP) turbines of radioiodines and corrosion products. These calculations were limited by the uncertainties of the measured radionuclide concentrations and system flow rates.

2.2.3 Condensate Cleanup System

Condensate cleanup is accomplished in both units by a bank of four filter demineralizers (CFDs) and six deepbed demineralizers (CDDs). See Figure 3-4. Decontamination factors (DFs) were calculated for the total CFD, individual CFDs, total CDD, and individual CDDs. In Unit No. 1 no DFs were determined for the CDDs due to the paucity of real value CDD inlet and outlet measurements (i.e., radionuclides were not detected in the inlet or outlet - only lower limits of detection were obtained). Tables 2.1 and 2.2 list the median,

TABLE 2.1

CONDENSATE FILTER DEMINERALIZER DFs FOR UNITS NO. 1 AND UNIT NO. 2

	Unit No. 1 DF			Unit No. 2 DF		
Nuclide	Median	Minimum	Maximum	Median	Minimum	Maximum
^{131}I	>2	<0.7	>3	5	0.7	8.8
^{132}I	>2	<0.9	>19	16	0.5	32
^{133}I	21	>2	>30	7.2	0.7	14
^{134}I	*			23.3	0.4	49
^{135}I	9	>3	>6	14.8	<0.9	74
^{134}Cs	*			2	<0.2	<3
^{137}Cs	*			2	<0.06	2.2
^{24}Na	0.8	1.2(-2)	>2.4(3)	1.1	0.1	4.9
^{51}Cr	23	<0.5	>33	19.0	0.4	40
^{54}Mn	<0.5	<0.3	18	3	0.8	15
^{58}Co	<2	<2	>10	4	0.1	<110
^{60}Co	>1	<0.6	16	4	0.2	8
^{91}Sr	*			21.7	0.4	60
^{139}Ba	20	>4	>16	22.6	0.7	<400
^{140}Ba	*			11	0.6	40
^{239}Np	*			2	0.86	2.7

* No data.

TABLE 2.2

CONDENSATE DEEPBED DEMINERALIZER DFs FOR UNIT NO. 2

Nuclide	DF Median	DF Minimum	DF Maximum
^{131}I	>34	>5	1000
^{132}I	>89	>10	160
^{133}I	210	>20	720
^{137}Cs	>9	>1	>340
^{24}Na	>290	>10	500
^{51}Cr	>2	>1	5
^{54}Mn	>3	<1	>10
^{59}Co	>6	>1	>10
^{60}Co	>7	>3	>100

minimum, and maximum CFD DFs for both Units No. 1 and No. 2 and CDD DFs for Unit No. 2, respectively. Median values of the skewed DF distributions are used in this report as they are most representative of the more frequently observed DFs. Table 2.3 lists this information for the total condensate cleanup system for Unit No. 2 prior to shutdown on April 23, 1982. The median and ranges of DFs for the CFDs in Unit No. 1 were (a) 4 and 0.5 to >30 for radioiodines, (b) 0.8 and 0.01 to >2400 for ^{24}Na, (c) 3 and 0.1 to >33 for corrosion products, and (d) >2 and >1 to >16 for bariums.

Unit No. 2 CFD DFs were found to vary with half-life for the radioiodines and cesiums with the range being 0.5 to 74 for radioiodines and 0.6 to 10 for cesiums (see Table 3.7). This variability is attributed to a migratory trend of the soluable radionuclides through the powdered resin. The median DF for the radioiodines and cesiums were 8 and 2 respectively. Cobalt and barium DF median values and ranges were 0.1 to 8 and 0.6 to 40, respectively. For the CDDs the DF median values and ranges were (a) >88 and >2 to 1000 for radioiodines, (b) >8 and >2 to >680 for cesiums, (c) >290 and >10 to 500 for ^{24}Na, (d) >4 and <1 to >100 for corrosion products and (e) >7 and >2 to >250 for fission products. These DFs agree well with measured particulate and soluble fractions. Total condensate cleanup system median and ranges of DFs, prior to April 23, 1982, were (a) >425 and >72 to 2000 for radioiodines, (b) >15 and >4 to >1100 for cesiums, (c) >810 and >530 to >1500 for ^{24}Na, (d) >16 and >2 to >87 for corrosion products, and (e) >73 and >5 to >370 for all other fission products. Therefore, this system effectively removes radionuclides from the condensate liquid in both units.

2.2.4 Feedwater System

Feedwater and heater drain deaerator tank outlet radionuclide concentrations were measured in both units. Measured concentrations show that the pump forward section of each unit is operating at different flow rates: Unit No. 1 being approximately 30% of the feedwater flowrate and Unit No. 2 approximately 20%. Reasons for this deviation are not known. Calculations were performed to determine what effect the feedwater radionuclide concentrations had on the equilibrium reactor coolant concentrations. In Unit No. 1, the feedwater accounted for 40% of the required production to maintain the equilibrium concentrations in reactor coolant. In Unit No. 2, the percentage was 37%. Caution should be used in interpreting what this means, as studies at BWRs[13] have shown that most of the particulate material entering the reactor vessel from the feedwater can be rapidly plated out.

Filtered data for Unit No. 2 show that all radionuclides had particulate fractions similar to those as was measured for the CFD inlet. Any conclusions that may be inferred from this observation are complicated by the fact that reactor coolant was blown down to the hotwell essentially all the time prior to refueling. Therefore, the particulate fraction that is carried over in the main steam cannot be determined.

TABLE 2.3

CONDENSATE CLEANUP SYSTEM DFs FOR UNIT NO. 2 PRIOR TO 4-23-82

Nuclide	Median	Minimum	Maximum
^{131}I	>1.9 (2)	>1.2 (2)	6.3 (2)
^{132}I	>1.0 (3)	>2.2 (2)	1.5 (3)
^{133}I	>1.5 (3)	1.1 (3)	2.0 (3)
^{134}I	>4.1 (2)	>85	>1.0 (3)
^{135}I	>4.0 (2)	>2.9 (2)	>9.6 (2)
^{134}Cs	>37	>6	>1.1 (3)
^{136}Cs	>7	>6	>1.0 (2)
^{137}Cs	>20	>4	>5.7 (2)
^{138}Cs	21	>8	29
^{24}Na	>8.1 (2)	>5.3 (2)	>1.5 (3)
^{51}Cr	>62	>32	>87
^{54}Mn	>10	4	>360
^{59}Fe	>13	>4	>22
^{58}Co	>21	>4	>41
^{60}Co	>15	>8	>31
^{65}Zn	>5	>2	>10
^{91}Sr	>96	>5	>3.5 (2)
^{139}Ba	>85	>27	>3.7 (2)
^{140}Ba	>60	>18	>73
^{239}Np	>77	>62	>2.7 (2)

Mass balance calculations for radioiodines and ^{24}Na indicate that in Unit No 2 53 to 63% of the ^{131}I and 0.7% of the ^{24}Na in the main steam is transported back to the reactor via the pump forward pathway. The transport fractions in Unit No. 1 for ^{131}I was 48% and 37% for ^{24}Na. The difference between the Unit No. 1 and Unit No. 2 ^{24}Na transport fraction is not understood. One would have expected to see a ^{24}Na transport fraction in Unit No. 2 that was close to the ^{131}I transport fraction. However, it is interesting to note that in Unit No. 1 on 6-8-82 the transport fraction for ^{24}Na was 5%.

2.3 Reactor Water Cleanup System

In Unit No. 1 the filter demineralizer (FD) was operated more than 90% of the time during the in-plant study. This is in contrast to Unit No. 2 which operated the FD only during the refueling shutdown. In Unit No. 1 the FD was backwashed and precoated on the average of every 3.5 days. Table 2.4 lists median DFs for all measured radionuclides for Unit No. 1. Median values and measured ranges of DFs for the FD were (a) 10 and <0.8 to 26 for ^{131}I, (b) >6 and <0.7 to >10 for ^{137}Cs, (c) 19.8 and 7.3 to 26.7 for ^{24}Na, (d) 28 and 3.6 to 83 for ^{54}Mn and (e) 28 and 3.3 to 51.3 for ^{60}Co.

As the FD was used only during the refueling shutdown in Unit No. 2, median DFs were not determined for this unit. During periods of reactor coolant spiking, the FD is exposed to radionuclide concentrations that are not representative of normal conditions. The DFs did increase significantly with increased radionuclide concentrations. During the sampling period the FD was backwashed and precoated frequently. At one point the FD was only recirculated for 29 minutes with a resultant increase in DF when it was returned to service. A possible explanation for this observed increase in DF is that the recirculated water carried the resin fines back to the front of the FD where they deposited, thus building up a new FD bed. Filtered data confirm that the mechanism of DF failure is from the resin fines breaking through the screen supports, (i.e., there is a drastic increase in the FD outlet particulate fraction with no comparable increase in the inlet stream.)

2.4 Liquid Radwaste Treatment System

During the in-plant measurement period at Brunswick, the plant was in a major program to upgrade the capacity of the liquid radwaste treatment system and to rebuild several systems that had been out of service. As a result, the 20 and 50 gpm waste evaporators were out of service and some temporary systems were in use. Regenerate waste tanks had been converted to deep bed demineralizers and a concrete tunnel was being used as a storage tank. Large amounts of solids were also present in the system as demonstrated by the fact that the radwaste collection FD was changed four to five times per day due to particulate loading during much of the in-plant measurement

TABLE 2.4

UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER DFs

Nuclide	DF Median	DF Minimum	DF Maximum
^{131}I	10	<0.8	26
^{132}I	28	>3	70
^{133}I	17.6	>5	36
^{137}Cs	>6	<0.7	>10
^{24}Na	19.8	7.3	26.7
^{51}Cr	21.7	13.5	37.1
^{54}Mn	28	3.6	83
^{56}Mn	57.8	7.5	420
^{59}Fe	32	1.9	173
^{58}Co	31	4.7	67
^{60}Co	28	3.3	51.3
^{110m}Ag	31.2	<10.7	170

period. These conditions and associated operational problems made characterization of the liquid radwaste treatment system difficult as the system was not representative of either the new treatment system being installed or the old system that was being replaced. However, some conclusions may be made concerning the behavior of radionuclides in this systems.

The principal liquid waste collection points at the Brunswick plant are the waste collection tank and the floor drain collection tank. In both tanks, radionuclides with short half-lives were observed (e.g., ^{132}I and ^{134}I). Based on conversations with plant personnel, it was determined that the source of these radionuclides was leakage from the control rod drive mechanisms (~30 gpm per reactor) and that the liquid radwaste treatment system was used to process between 100,000 and 200,000 gallons per day. The processed effluent from this system was either used for feedwater or discharged to the canal.

Both the FDs and deepbed demineralizers present in the liquid radwaste treatment system were found to exhibit similar behavior (i.e., they functioned as both filters and demineralizers depending on their time in operation). When a new demineralizer bed was placed in use, it was found to initially behave as a demineralizer for a period of time and then, as the ion exchange capacity was depleted and particulate loading occurred, as a filter. This behavior was observed for all demineralizer systems studied. The DFs for these demineralizer systems were rarely greater than 100 for any system and generally were on the order of 1 to 10. The system with the best observed DFs (~1000) was the waste collection system.

The range of dissolved and particulate fractions was extreme in that normally soluble radionuclides were found in particulate form (sometimes > 50%) and normally particulate radionuclides were found in a soluble form. It is suspected that the reason that radioiodines and radiocesium were measured in a particulate form is that they had been adsorbed on resin bead fragments that were filterable. The high soluble fraction for normally particulate radionuclides (e.g., $^{58,60}Co$) is suspected to be due to the formation of soluble complexes or that the particle size was less than the 0.45 μm filter size used. Some radionuclides such as ^{59}Fe exhibited almost for almost all samples in contrast with the other radionuclides.

Discussions with plant personnel in October 1983 indicated that the radwaste treatment system upgrade has been completed and that the upgrade substantially improved operation of the system. The pipe tunnels are no longer being used for storage of liquids and the particulate content of the liquid has been reduced considerably (e.g., very little resin fines are now present in the liquid). Because of this, the liquid radwaste treatment system is now operated in a more effective manner than it was during the in-plant measurement period.

2.5 Spent Fuel Pool Cleanup System

There are separate identical spent fuel pool systems for each of the two reactors at Brunswick. The cleanup systems are used primarily for

radioactivity and chemical control of the water in the spent fuel pools, but are also used as auxiliary systems for treating other plant liquids. Each fuel pool's cleanup system consists of a skimmer surge tank, a heat exchanger, and two FDs. Most measurements were made of the Unit No. 2 system because the measurement period spanned a refueling shutdown and, therefore, allowed determination of DFs for short-lived radioisotopes not present in the Unit No. 1 system.

Median DFs of the FDs and ranges of radionuclide concentrations measured in the Unit No. 2 spent fuel pool water are shown in Table 2.5. No identifiable differences were observed between the DFs of the two Unit No. 2 FDs or between the Unit No. 2 and Unit No. 1 FDs.

The DFs for iodine and cesium radionuclides decreased from approximately 8 immediately after ion exchange resins were changed in the FDs to approximately 1 after operation for a few days. The DFs for crud-associated radionuclides (such as ^{54}Mn, ^{59}Fe, ^{58}Co, ^{60}Co, and ^{65}Zn) varied over a range of 50 to 1, but the dependence of DF on time after resin changes was not as consistent as for the iodines and cesiums. The coatings of ion exchange resins on the screens of the FDs were changed at frequent and irregular intervals during the measurement period. Therefore, no quantitative relation was determined between the DFs and the amount of water processed through the system.

Several sample pairs were taken for which one sample was counted without filtration and one sample was filtered through 0.45 μm filters. Both filtered and filtrate radioactivity were measured for the filtered samples. These measurements showed 90-100% of the iodine and cesium radionuclides and 10-50% of the crud-associated radionuclides to be in soluble form.

Within one month after transfer of fuel to the spent fuel pool, the concentrations of all radionuclides in the fuel pool were reduced by a factor of ten or more, indicating sufficient cleanup capability to control the radioactivity in the fuel pool. After about one month, the FDs were operated less often. The concentrations of the longer-lived radionuclides then increased, apparently due to leakage and surface leaching of radionuclides from the stored fuel.

2.6 Summary of Filter Demineralizer Behavior

An analysis of the median DFs for all FDs in the Brunswick Steam Electric Plant was performed to see if there were any correlating factors. The radwaste treatment system FDs and the Unit No. 2 RWCU results were not included in the analysis due to the erratic operation of these systems. The average inlet radionuclide concentration and median DFs are listed in Table 2.6 for the Unit No. 1 RWCU, Unit No. 2 Fuel Pool, and Units No. 1 and No. 2 CFDs. There was no correlation between FD performance, as characterized by the DF, and inlet concentration or FD size. A cursory review of Table 2.6 shows the median DFs to be erratic for any radionuclide in any cleanup system. Time frames between FD changeout in all the systems were erratic, which may be due to poor precoating or particulate loading.

TABLE 2.5

RANGES OF RADIONUCLIDE CONCENTRATIONS AND AVERAGE FILTER/DEMINERALIZER DFs FOR UNIT NO. 2 SPENT FUEL POOL

Nuclide	Range of Concentrations in Spent Fuel Pool Water (μCi/g) Minimum	Maximum	Median DFs of Filter/demineralizers
^{131}I	< 3(-7)	8.0(-4)	3.7
^{132}I	< 5(-7)	5.0(-4)	3.2
^{134}Cs	8.4(-6)	1.6(-2)	2.4
^{136}Cs	< 4(-7)	1.6(-4)	3.0
^{137}Cs	2.0(-5)	2.1(-2)	2.4
^{54}Mn	4(-7)	7.0(-4)	2.3
^{59}Fe	< 5(-7)	1.1(-4)	4.3
^{58}Co	< 4(-7)	3.4(-4)	3.9
^{60}Co	9.2(-5)	3.3(-2)	3.8
^{65}Zn	< 4(-7)	3.5(-4)	4.1
^{95}Nb	< 2(-7)	6(-6)	0.6
^{99}Te	< 2(-7)	8(-4)	23
^{140}Ba	< 2(-7)	3.7(-5)	2.5
^{239}Np	< 5(-7)	8.3(-5)	1.4

TABLE 2.6

AVERAGE RADIONUCLIDE INLET CONCENTRATIONS ($\bar{I}$) AND MEDIAN DFs FOR ALL SYSTEM FILTER DEMINERALIZERS

	U-1 RWCU		U-2 Fuel Pool		U-1 CFD		U-2 CFD	
Nuclide	$\bar{I}$ μCi/g[a]	DF	$\bar{I}$ μCi/g[b]	DF	$\bar{I}$ μCi/g[c]	DF	$\bar{I}$ μCi/g[d]	DF
^{131}I	7.37 ± 0.4(-6)	10	2.44 ± 0.02(-4)	4	1.9 ± 0.2(-7)	>2	5.07 ± 0.02(-5)	5
^{132}I	2.84 ± 0.05(-4)	28	1.59 ± 0.01(-4)	4	2.6 ± 0.1(-6)	>2	5.20 ± 0.02(-4)	16
^{134}Cs	*	<7	5.89 ± 0.02(-4)	3	*	**	1.4 ± 0.2(-6)	2
^{137}Cs	*	>6	7.10 ± 0.04(-4)	3	*	**	1.6 ± 0.3(-6)	2
^{54}Mn	1.18 ± 0.01(-4)	28	3.08 ± 0.02(-4)	8	9 ± 2(-6)	<0.5	1.2 ± 0.4(-6)	3
^{59}Fe	2.01 ± 0.03(-5)	32	3.47 ± 0.04(-5)	>12	*	**	*	**
^{58}Co	1.05 ± 0.02(-4)	31	1.49 ± 0.01(-4)	9	3.3 ± 0.7(-6)	<2	1.3 ± 0.5(-6)	4
^{60}Co	9.09 ± 0.03(-5)	28	8.88 ± 0.04(-4)	7	3.0 ± 0.8(-6)	>1	2.80 ± 0.05(-6)	4
^{140}Ba	*	>14	2.7 ± 0.1(-5)	2	*	**	1.62 ± 0.03(-5)	11
^{239}Np	*	**	4.6 ± 0.1(-5)	1	*	**	6.70 ± 0.04(-5)	2

a. Average from 3-14-82 to 6-16-82
b. Average from 5-1-82 to 6-20-82
c. Average from 3-17-82 to 7-1-82
d. Average from 3-15-82 to 4-20-82

* Inlet values were less thans or no data.
** Too few values to calculate median DF.

2.7 Ventilation System

As shown in Figure 1-2, there are five release points to the atmosphere from the station. The two reactor building release points have no cleanup prior to release. Turbine building vents have HEPA filtration and charcoal treatment prior to release and the main stack vent has HEPA filter treatment prior to release. At the time of the in-plant measurements, the augmented off-gas system was not operable; therefore, the off-gas from the steam jet air ejectors from both units passed only through a thirty-minute delay line prior to entering the main stack filters.

Releases of radioiodine from Brunswick were dominated by Unit No. 2 because of the much higher coolant concentration in that plant compared with Unit No. 1. Table 2.7 summarizes the release rates of ^{131}I from the plant when both units were operating. The largest single source of ^{131}I release to the environment was the main stack. During power operation the release rate was 0.018 μCi/s or 88% of the total. Virtually all of it was the off-gas from the condensers and gland seal exhausts. The next largest source was the Unit No. 2 reactor building which accounted for 12% of the total. The combined turbine building exhaust contributed less than 0.2% of the total release rate of ^{131}I. The low rate from the turbine building is the result of recirculating 90% of the ventilation air and filtering the exhaust through charcoal.

To compare releases of ^{131}I from Brunswick with other BWRs, release rates from each release point were normalized by dividing the absolute release rate by reactor coolant concentration. In the case of the main stack and turbine building exhaust, the normalized release rate (NRR), see Table 2.7 footnote a, was calculated using the Unit No. 2 reactor coolant concentration. The results are listed in Table 2.7. Release rates from the main stack and turbine building exhausts were much lower at Brunswick. Releases from reactor building exhausts were considerably higher at Brunswick than other BWRs.

The chemical species fractions for ^{131}I in the ventilation exhaust during power operations from Unit No. 2 reactor building were indicative of a fresh iodine source, but were in the range of those measured at other plants. The reactor water cleanup pump was known to be the source of leakage. The average fractions were:

Particulate and Elemental	58%
HOI	32%
Organic	10%

These fractions changed on a weekly basis during the outage with HOI dominating early in the outage and a gradual increase in organic fraction during the outage.

The chemical species fractions of ^{131}I in the turbine building prior to the outages were indicative of older iodine that has been measured

TABLE 2.7

^{131}I RELEASE RATES TO THE ATMOSPHERE DURING POWER OPERATION (3/15 - 4/22/82) OF UNITS NO. 1 and NO. 2 AT BRUNSWICK

	Absolute (μCi/s)	Normalized (μCi/s/μCi/g)	
		Brunswick	Average of Other BWRs
Main Stack	1.8 (-2)	8.3[a,d]	54[e]
Reactor Building Exhaust			
Unit 1	1.6(-5)	1.6	0.25[f]
Unit 2	2.5(-3)	1.1[a]	
Turbine Building Exhaust			
Unit 1	1.5(-5) [4.1(-4)][b]	1.3(-2)[c]	2.8[g]
Unit 2	1.4(-5) [6.6(-4)][b]	[0.49][b,c]	(Single unit)

a. Normalized release rate (NRR) is the absolute release rate divided by the average coolant concentration in Unit 2 over the same period (2.2(-3) μCi/g).

b. Values in brackets are release rates ahead of charcoal filters.

c. Normalized release rate is calculated by adding the releases from Units No. 1 and No. 2 and dividing by the average reactor water concentration in Unit No. 2.

d. Includes ^{131}I in radwaste building ventilation exhaust air which was 3.8(-4) μCi/s and 0.17 μCi/s/μCi/g.

e. Average of the 5 modified NRRs in last column of Table 6.4 multiplied by the carryover fraction from reactor water to steam for Brunswick (0.0165).

f. Average of the 4 NRRs in first column of Table 6.6.

g. Average of the 4 modified NRRs in the third column of Table 6.11 multiplied by 0.0165.

in turbine building exhaust air at other BWRs. The reason for the larger organic fraction is believed to be the increased residence time of the iodine in the turbine building due to recirculation of ventilation air. This allows more time for deposition and resuspension which changes the form of the iodine. The average species fractions of ^{131}I in turbine building exhaust air ahead of the charcoal filters at Brunswick are shown below along with average fractions from 3 other BWRs[14] using once through ventilation systems.

	Brunswick	Others
Particulate and Elemental	53%	78%
HOI	23%	13%
Organic	24%	9%

The DFs of the turbine building HEPA charcoal cleanup systems did not appear to be a function of time during the period measurements were made. There did appear to be a definite trend of decreased DF with increased organic iodine fraction. While the DF for iodine was a function of the percentages of the species present, an average DF of 65 was determined for a stable operating condition.

The consistency of coolant non-spike and spike calculated normalized release rates indicates that transient spikes in the coolant do not immediately affect the ventilation releases. This has also been seen in data reported for pressurized water reactors.[4,5] This is due to the fact that there is an inventory of iodine in waters and systems throughout the plant of which the coolant is only a part. An increase in the coolant concentration does not produce a proportionate increase in the total plant inventory.

Table 2.8 summarizes the measurement results for ^{14}C and tritium. The major source of ^{14}C was the main stack. The main stack accounted for 97% of the ^{14}C releases prior to the Unit No. 2 refueling outage. Greater than 90% of the ^{14}C was in the oxidized form. The remaining 3% of the ^{14}C was released from the Unit No. 2 turbine building. This release occurred over a short period of time and most of the ^{14}C was in the unoxidized form. When both units were out of service, the release rate of ^{14}C decreased in the turbine building and the main stack. It did not decrease appreciably in the exhaust from the reactor building. This may indicate that the fuel storage pool was the source.

When both units were operating, prior to the Unit No. 2 refueling, release of tritium was divided more or less equally between the main stack (31%), reactor buildings (39%) and turbine building (30%). Tritium in the main stack was 30% to 50% oxidized. Tritium from the other sources was essentially all oxidized (i.e., water vapor). During the outages, the release rates of tritium were much lower in the exhaust air from the turbine and reactor buildings. When both units were down, tritium release from the main stack was from the radwaste building ventilation.

TABLE 2.8

RELEASE RATES OF ^{14}C AND TRITIUM, BRUNSWICK

	Both Units Operating[a] (μCi/s)		Both Units Down[b] (μCi/s)	
	^{14}C	^{3}H	^{14}C	^{3}H
Turbine Building				
Unit No. 1	1.1(-4)	7.8(-2)	2.0(-5)	1.7(-3)
Unit No. 2	8.4(-3)	1.0(-1)	2.0(-5)	1.0(-3)
Reactor Building				
Unit No. 1	5.5(-4)	1.4(-1)	6.0(-4)	1.7(-3)
Unit No. 2	6.0(-4)	9.3(-2)	2.1(-4)	9.0(-3)
Main Stack	2.8(-1)[c]	1.9(-1)[d]	1.0(-2)[e]	3.0(-2)[e]

a. 3/15 - 4/22/82

b. 7/22 - 8/11/82

c. Includes 1.8(-3) μCi/s for ventilation exhaust air from the radwaste building.

d. Includes 2.0(-2) μCi/s for ventilation exhaust air from the radwaste building.

e. Contribution from radwaste building was not measured.

3. REACTOR COOLANT/MAIN STEAM AND REACTOR WATER CLEANUP SYSTEMS

3.1 System Description and Sample Points

3.1.1 Reactor Coolant/Main Steam System

For purposes of this discussion, the reactor coolant/main steam system (RC/MSS) is the total circuit traversed by the steam as it travels from the reactor vessel through the turbines, the condensate cleanup system, and is returned to the reactor vessel via the feedwater system. Figure 3-1 is a schematic of the RC/MSS. In the reactor, the coolant is heated and turned to steam as it passes upward through the core. At the top of the core the water-laden steam passes through a moisture separator and a steam dryer. The moisture that is removed is returned to the shroud area and recirculated with the feedwater through the core by the jet pumps. The generated steam moves out of the upper head area to the high pressure (HP) turbine via four main steam lines. The steam exiting the HP turbine goes to one of two moisture separator reheaters to improve the steam quality, then to the low pressure (LP) turbines (two turbines in parallel), and is exhausted to the condenser/hotwell. The condensed steam, termed condensate, is pumped from the hotwell by the three condensate pumps to the four condensate filter/demineralizers (CFDs) and then through the six condensate deepbed demineralizers (CDDs).

The CFDs are constructed of screens coated with special powdered resins (i.e., resins prepared with a wide range of particle sizes to improve their effectiveness for filtering particulates.) They are used to control both the chemistry and the radioactivity of the RC/MSS liquid. To recondition the FDs, the resin is removed by "backwashing" and new resin applied by "precoating." These procedures are accomplished using water flow, so no physical access to the screens is required.

The CFD's primary function is solids removal by filtration: a secondary function is minor ion exchange. The CDDs are mixed resin type (i.e., H^+ and OH^-) and their function is ion exchange removal of anions and cations.

The cleaned condensate, termed feedwater, flows through the drain cooler and a series of five feedwater heater pairs which increase the temperature of the feedwater prior to its being injected back into the shroud area of the reactor vessel by one of the two feedwater pumps.

Condensed steam from the moisture separator reheaters, the fourth stage of the HP turbine, reheater drain tanks, and the ninth stage of the LP turbines is collected in the heater drains deaerator tank (HDDT). This water is then injected back into the feedwater downstream of the 3A and B feedwater heaters. This part of the system is termed "pump forward" and accounts for approximately one-third of the total feedwater flow.

Logic dictates that the complete system can be more simply addressed if the four component systems are discussed separately. Therefore, the

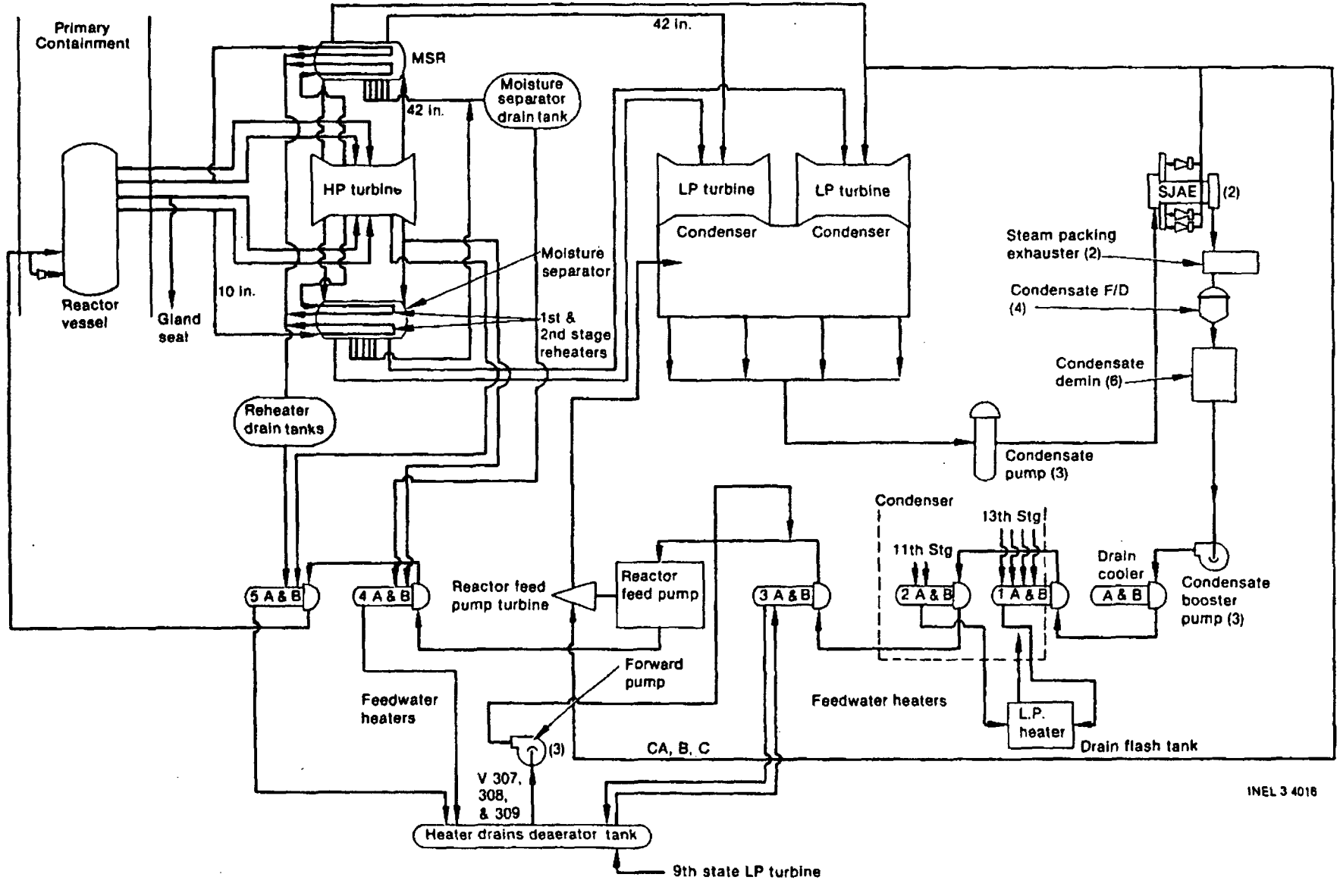


Figure 3-1. Reactor Coolant and Main Steam System

reactor vessel system (RVS) will be defined as all components from the reactor feedwater pumps to the HP turbine inlet. The turbine system (TS) will be all components from the HP turbine to the effluent of the condensate pumps. Condensate cleanup system (CCS) is defined to be the components from the inlet header to the CFDs to the effluent from the CDDs. The feedwater system (FS) is those components from the effluent of the CDDs to the reactor feedwater pumps and also the inlet streams to the pump forward sub-system.

3.1.1.1 Reactor Vessel System (RVS)

The RVS consists of the reactor vessel, the recirculation pumps and lines, feedwater lines, and main steam lines. There are three sample locations in this system. The first is off the discharge of the recirculation pump. This is the water that is circulated through the core; i.e., the reactor feedwater and the water returned to the shroud area from the moisture separator and steam dryer. The second is a main steam probe located in one of the four main steam lines. The last sample location is the inlet to the filter/demineralizer (FD) in the reactor water cleanup system (RWCS), discussed further in Section 3.1.2. This sample is a mixed sample composed of the feed to the system coming from the recirculation loop and also feed from the bottom head of the reactor vessel. Figure 3-2 is a detailed schematic of the RVS with the sample sink identifiers used to denote the sample points. The main steam sample is obtained in the turbine building sample sink (TBSS) and the rest are obtained in the reactor building sample sink (RBSS).

3.1.1.2 Turbine System (TS)

This system consists of the HP and LP turbines, the condenser, and the hot well. There are no available sample locations in this subsystem, however inlet and effluent samples of the TS can be obtained from other systems. The inlet sample is the main steam probe and the outlet samples are (a) the inlet to the CFDs and (b) the HDDT outlet. Figure 3-3 shows a detailed schematic of the TS.

3.1.1.3 Condensate Cleanup System (CCS)

This system is composed of the four CFDs and the six CDDs. There are sample points on (a) the CFD inlet header, (b) each of the four CFD effluents, (c) the CDD inlet header, (d) each of the six CDD effluents and (e) the CDD effluent header. All samples from this system are obtained in the radwaste building sample sink (RWBSS). Figure 3-4 shows a detailed schematic of the CCS with RWBSS used to identify the sample points.

3.1.1.4 Feedwater System (FS)

This system contains the two drain coolers; two each of the No. 1, 2, 3, 4, and 5 feedwater heaters; and equipment associated with the pump forward system. Sample locations are the (a) effluent of the 2A and 2B feedwater heaters, (b) effluent of the 3A and 3B feedwater heaters, (c) feedwater and (d) HDDT pump discharge header. The pump forward water is added to the feedwater upstream of the 3A and 3B feedwater heater effluent sample line.

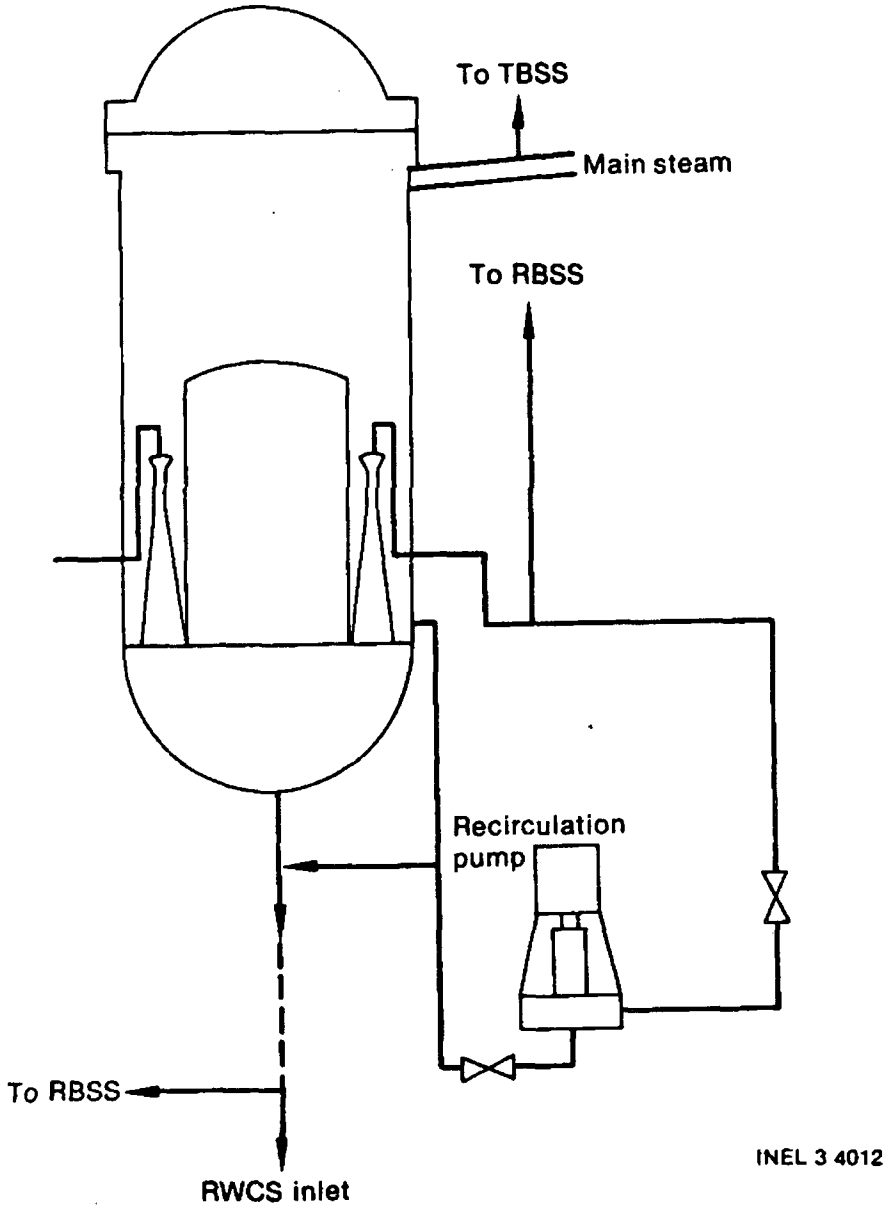


Figure 3-2. Sample Locations in Reactor Vessel System

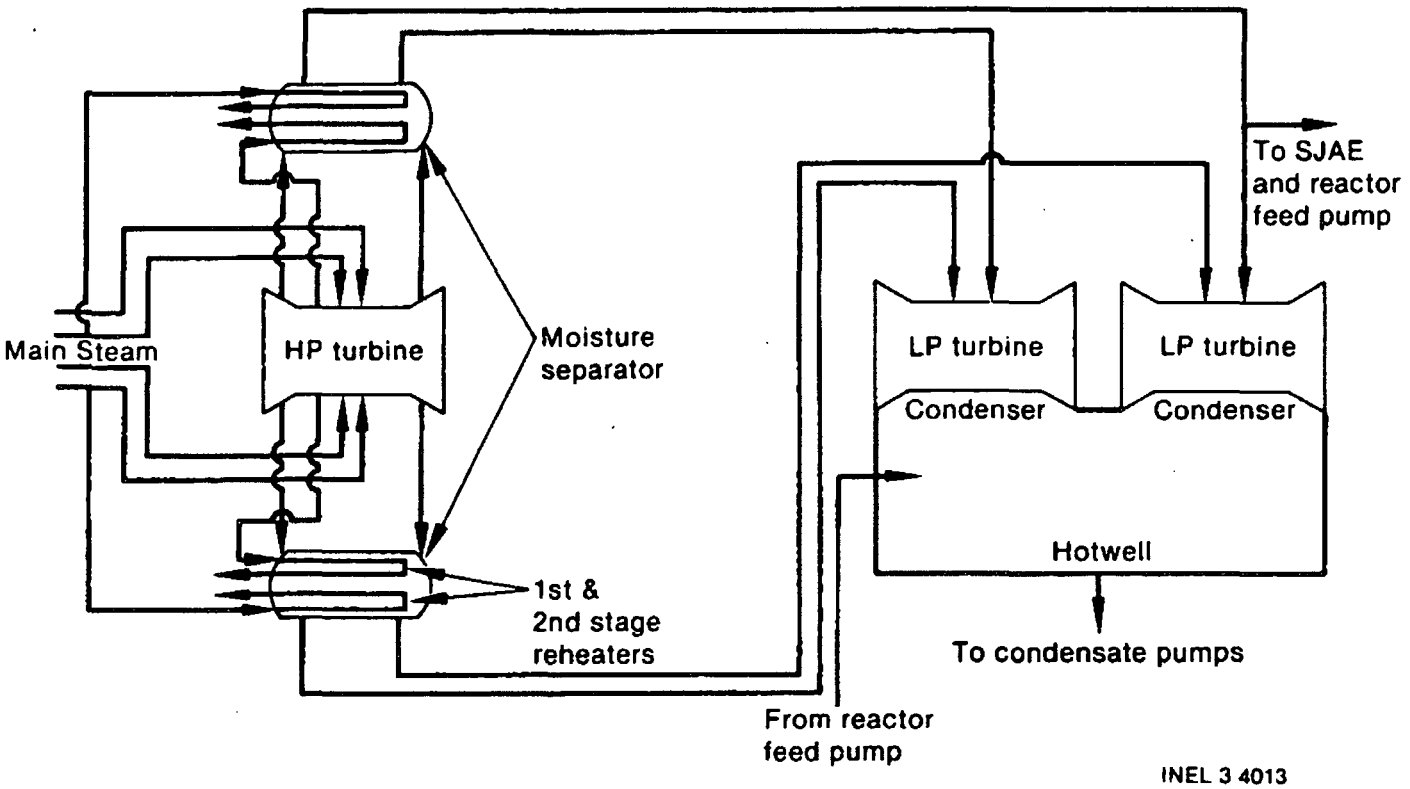


Figure 3-3. Diagram of Turbine System

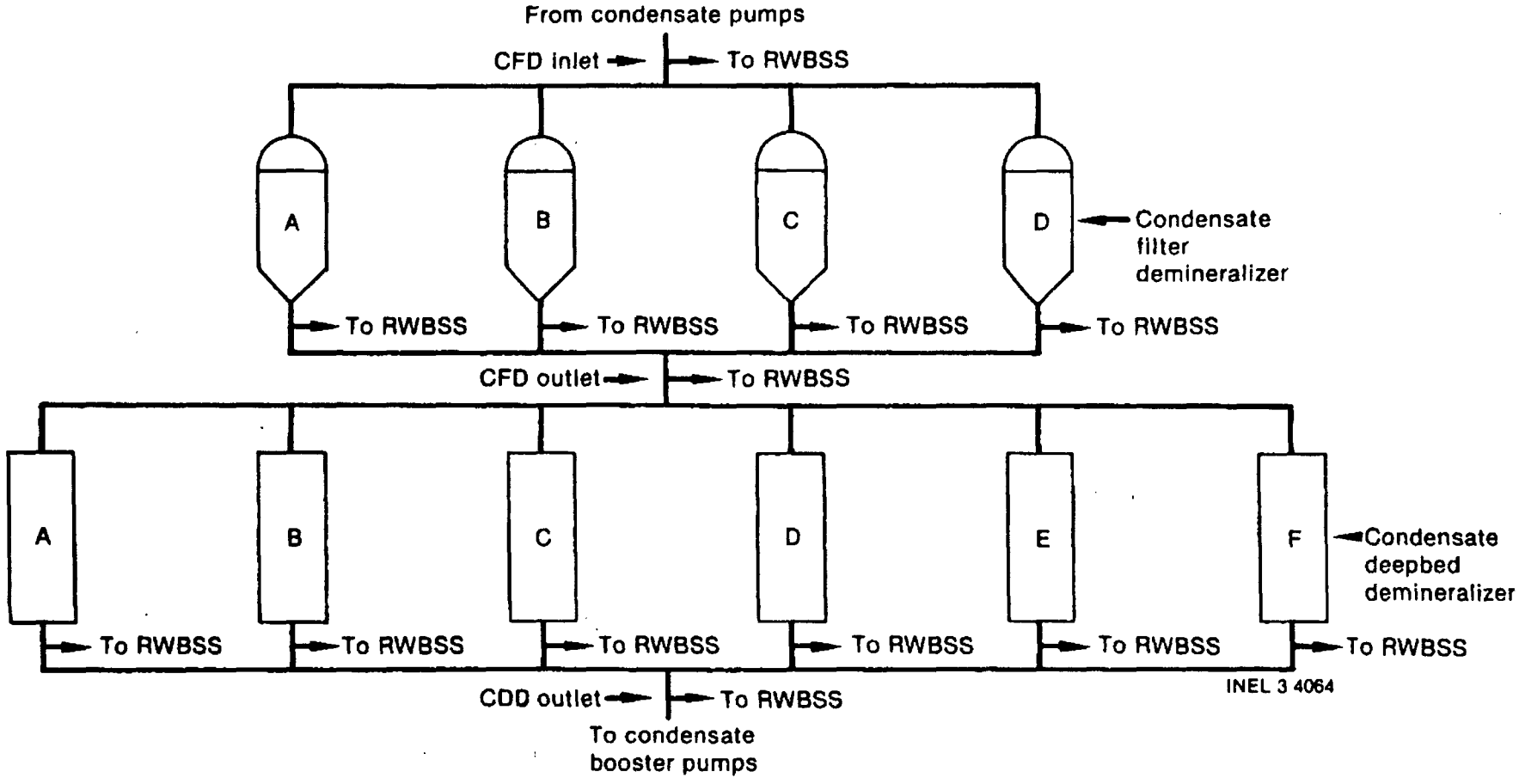


Figure 3-4. Diagram of Condensate Cleanup System

All samples from this system are obtained in the TBSS. Figure 3-5 shows a detailed schematic of the FS with TBSS used to identify the sample points.

3.1.2 Reactor Water Cleanup System (RWCS)

In a BWR, the reactor water cleanup system (RWCS) primarily removes corrosion and fission product impurities from the reactor vessel water. This minimizes the fouling of heat transfer surfaces caused by core deposits. A secondary use is water level control during startup and shutdown operations. This is accomplished by rejecting water to either the radwaste system or the condenser/hotwell.

Reactor coolant from the bottom head area and a disestream from the recirculation line enter a common line leading to the RWCS. The coolant in this system passes through the tube side of three regenerative and two non-regenerative heat exchangers to cool the water. The coolant is filtered by one of two FDs and then passes through the shell side of the three regenerative heat exchangers, heating the water, before being injected into the feedwater. Figure 3-6 shows a schematic of the reactor water cleanup system. Samples for this system are obtained in the RBSS and allow for liquid sampling on either side of the FDs.

3.2 Discussion of Measurement Data

3.2.1 Reactor Vessel System (RVS)

Initial expectations for the sampling program at Brunswick Units No. 1 and No. 2 were to obtain reactor coolant samples from each unit weekly during the in-plant measurement period. However, once sampling started, it was concluded that the low radionuclide concentrations in Unit No. 1 would not give as much information as samples from Unit No. 2, where radionuclide concentrations were 10 to 1000 times greater. Therefore, a more intensive sampling regime was used for Unit No. 2 until it was shut down for refueling. About mid-July, Unit No. 1 was shut down for an indefinite period. Therefore, with both units unavailable for meaningful sampling, all sampling efforts were suspended. During the last week of September and first week of October, both units started power operations, at which time sampling efforts were renewed. However, due to program and plant operation considerations, sampling efforts were terminated at the first of November. Utility-supplied data have been used to supplement radionuclide information for the post-refueling period for Unit No. 2.

3.2.1.1 Unit No. 1 RVS

Samples of reactor coolant were obtained from either the RCS or RWCS sample points. These samples were obtained every seven to twelve days until May 5: at that time when more emphasis was placed on Unit No. 1 as Unit No. 2 was shut down for refueling. Samples were then obtained at least weekly until July 17, 1982 when Unit No. 1 was shut down. Samples were also obtained weekly during the period September 26, 1982 to November 3, 1982 when the unit was back at power. Samples obtained during the periods

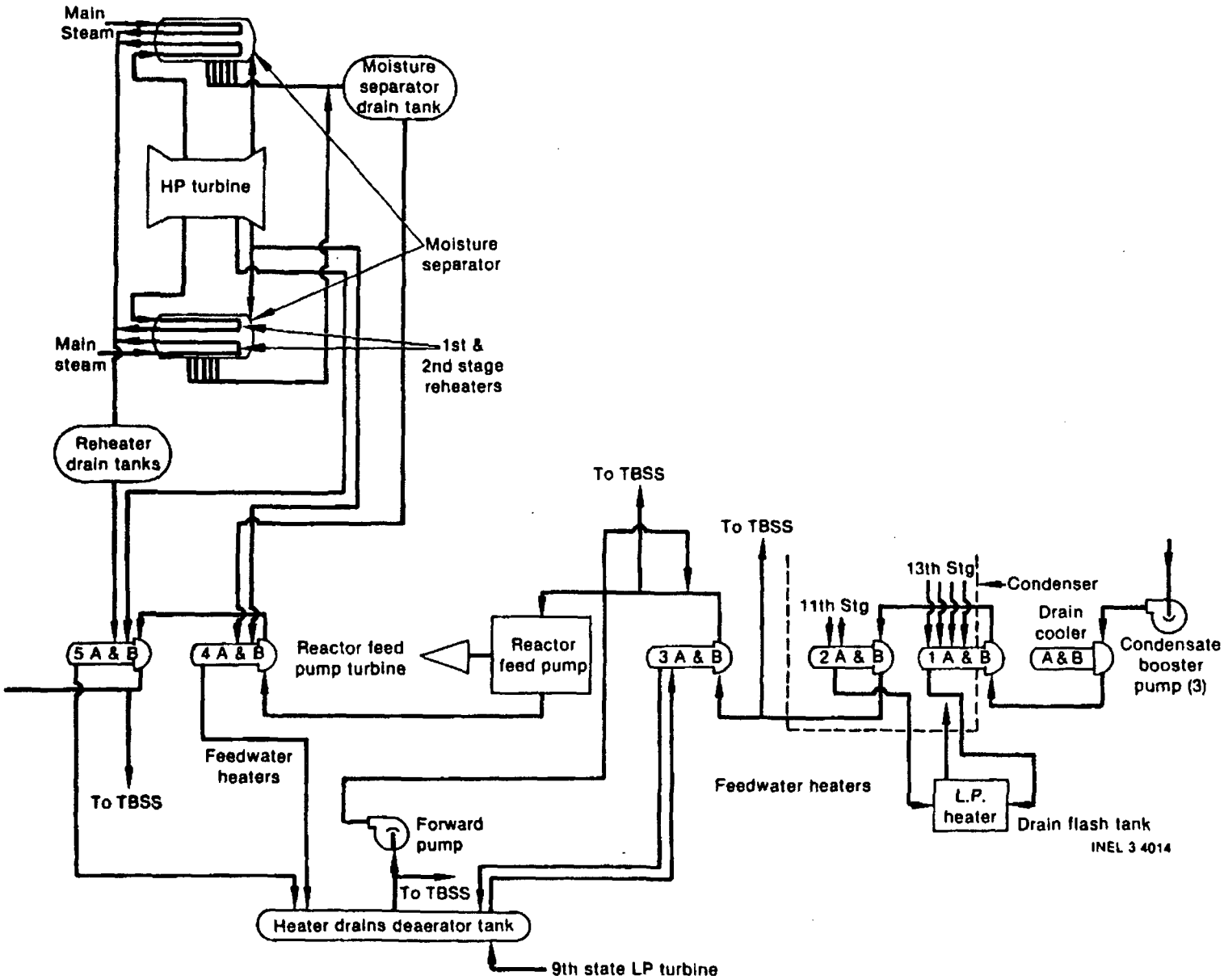


Figure 3-5. Diagram of Feedwater and Pump Forward Systems

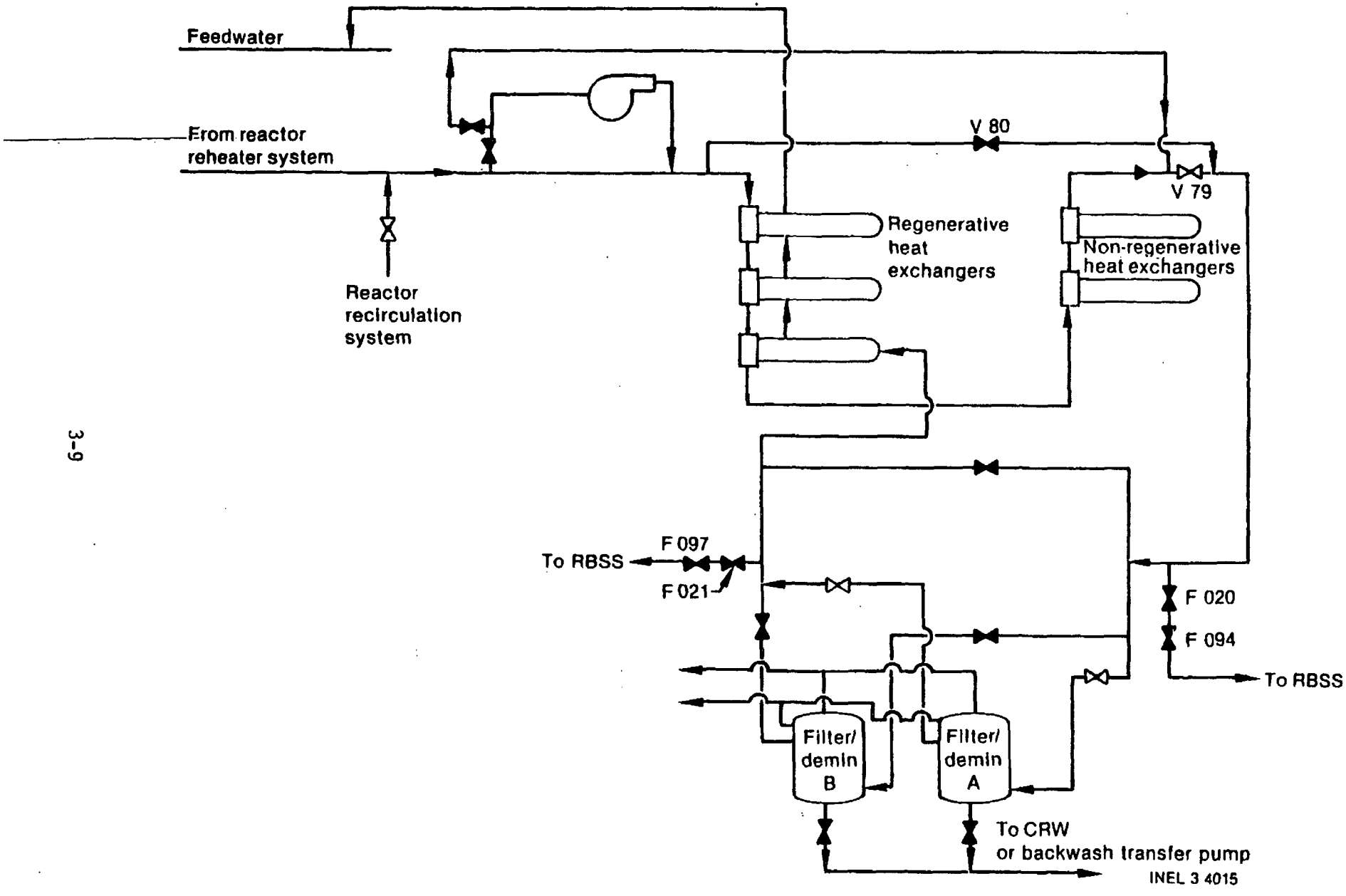


Figure 3-6 Reactor Water Cleanup System

June 7, 1982 to July 11, 1982 and September 26, 1982 to November 3, 1982 were filtered through 0.45 μm filters to determine the fraction of radionuclide activity that was rpesent as particulate material. Main steam was sampled five times during the sample period May 5, 1982 to June 8, 1982 and once on October 19, 1982. The sample of main steam taken on June 8, 1982 was also filtered. Results of these analyses are tabulated in Appendix Tables B.3-1 through B.3-7 for the RCS, filtered RCS, RWCS, filtered RWCS, less frequently observed radionuclides in RCS, main steam, and filtered main steam respectively. All liquid samples first pass through coolers and/or pressure letdown before reaching the sample point. Therefore, it is highly likely that the noble gas concentrations in the sampled liquid are not representative of dissolved noble gas concentrations in reactor coolant and main steam. Therefore, noble gas concentrations are not reported.

Table 3.1 lists the average radionuclide concentrations in the reactor coolant measured at steady state power operations during the period March 16, 1982 to July 9, 1982 and CP&L data for the period November 7, 1982 to December 12, 1982. Radioiodine data obtained from CP&L are listed in Appendix Tables B.3-111 and B.3-113. Sample data for the period September 26, 1982 to November 3, 1982 were not averaged due to the infrequency of steady state operations. Most radionuclides in the two averaged columns agree within a factor of two which is not considered a significant difference for data obtained on either side of a three-month outage.

Measured radioiodine concentrations in reactor coolant were used to evaluate the fission product release mode. This evaluation is discussed in Section 3.5.

Figure 3-7 is a plot of the power level and ^{131}I concentration in the Unit No. 1 reactor coolant. Both CP&L and EG&G data are included. The connecting line does not indicate ^{131}I concentrations between data points but is used only to assist the reader in determining trends. As shutdown spikes were not followed in Unit No. 1, Figure 3-7 cannot be used to evaluate maximum spike concentrations of ^{131}I. However, but there are obvious periods of elevated concentration which correlate with power transients.

Less frequently observed radionuclides are reported in Appendix Table B.3-5. Two points of interest are (a) the technetium radionuclides, which have not been reported in pressurized water reactor (PWR) coolant and may reflect differences in BWR and PWR coolant chemistry, and (b) the presence of ^{38}Cl which indicates sea water intrusion in the condenser/hotwell.

Results of sample filtering (see Appendix Tables B.3-8 and B.3-9) indicate that the radioiodines, cesiums, and ^{24}Na were soluble in the reactor coolant. Corrosion products varied in solubility, with ^{51}Cr being the most soluble while ^{60}Co, ^{59}Fe, and ^{54}Mn were least soluble, i.e., 20% to 80% particulate. These fractions tended to be higher in the October samples which reflects the elevated crud levels caused by the reactor power fluctuations. There is a large discrepancy between the particulate fractions

TABLE 3.1

UNIT NO. 1 AVERAGE RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT DURING REACTOR POWER OPERATIONS[a]
(microcuries/gram)

Nuclide	Measured During Period 3-16-82 to 7-9-82[b,d]	Brunswick Data During Period[c] 11-7-82 to 12-12-82
^{84}Br	<6(-4)	*
^{131}I	7.7 ± 0.9 (-6)	1.8(-5)
^{132}I	2.8 ± 0.2 (-4)	4.1(-4)
^{133}I	1.06 ± 0.09(-4)	2.2(-4)
^{134}I	6.6 ± 0.5 (-4)	6.0(-4)
^{135}I	2.4 ± 0.5 (-4)	3.5(-4)
^{134}Cs	1.4 ± 0.3 (-6)	*
^{137}Cs	1.5 ± 0.5 (-6)	*
^{138}Cs	1.4 ± 0.4 (-4)	*
^{24}Na	2.75 ± 0.03(-2)	1.9(-2)
^{51}Cr	1.36 ± 0.03(-2)	6.0(-3)
^{54}Mn	9.2 ± 0.2 (-5)	3.6(-4)
^{56}Mn	2.39 ± 0.04(-3)	*
^{59}Fe	1.9 ± 0.1 (-5)	*
^{58}Co	1.47 ± 0.04(-4)	1.0(-4)
^{60}Co	1.40 ± 0.02(-4)	2.9(-4)
^{65}Zn	7 ± 2 (-6)	*
^{91}Sr	2 ± 1 (-4)	*
^{91m}Y	9 ± 2 (-5)	3.2(-3)

TABLE 3.1 (CONT)

UNIT NO. 1 AVERAGE RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT DURING REACTOR POWER OPERATIONS[a]
(microcuries/gram)

Nuclide	Measured During Period 3-16-82 to 7-9-82[b,d]	Brunswick Data During Period[c] 11-7-82 to 12-12-82
^{95}Zr	<3(-6)	*
^{95}Nb	<3(-6)	*
^{99}Mo	1.4 ± 0.1 (-4)	*
^{103}Ru	<2(-6)	*
^{110m}Ag	1.8 ± 0.1 (-5)	*
^{124}Sb	1.3 ± 0.5 (-6)	*
^{139}Ba	1.0 ± 0.4 (-4)	*
^{140}Ba	<8(-6)	*
^{140}La	2.4 ± 0.5 (-5)	*
^{141}Ce	1.9 ± 0.8 (-6)	*
^{143}Ce	1.2 ± 0.7 (-5)	*
^{187}W	7 ± 2 (-5)	*

* Radionuclide not measured.

a. These average values include neither spike data nor less-than values averaged with real values.

b. Data obtained from the following samples (see Appendix Tables B.3-1 and B.3-3):

RCS	3-17-82	0901,	3-30-82	1617,	4-5-82	1532,
	4-12-82	1616,	5-25-82	1307,	5-31-82	1119,
	7-7-82	0945				
RWCS	3-14-82	1538,	5-11-82	0910,	5-13-82	1040,
	5-19-82	1258,	5-25-82	1308		

c. CP&L did not report uncertainties.

d. Uncertainties are one sigma values.

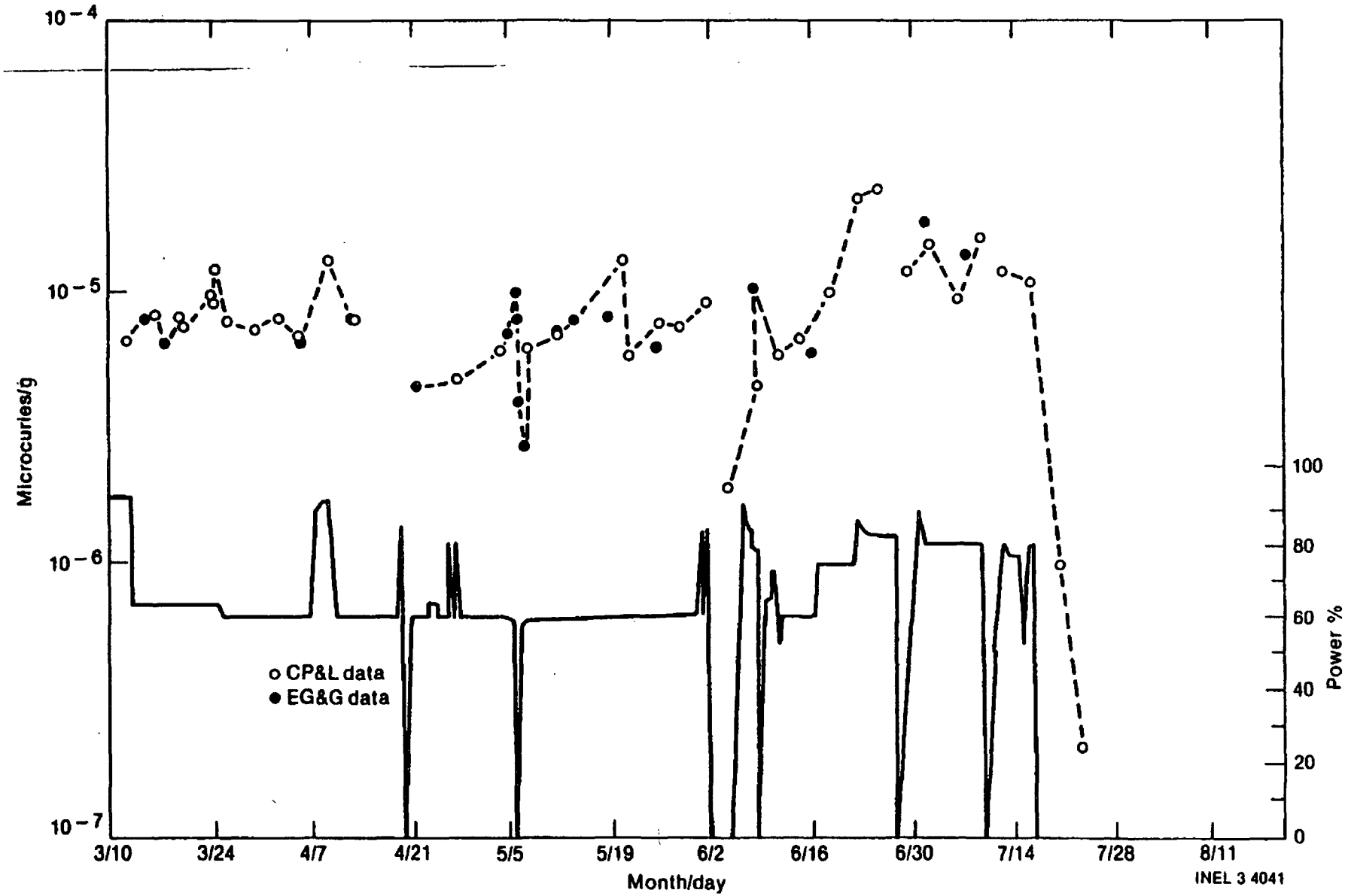


Figure 3-7. Unit No. 1 Power History and ^{131}I Concentration

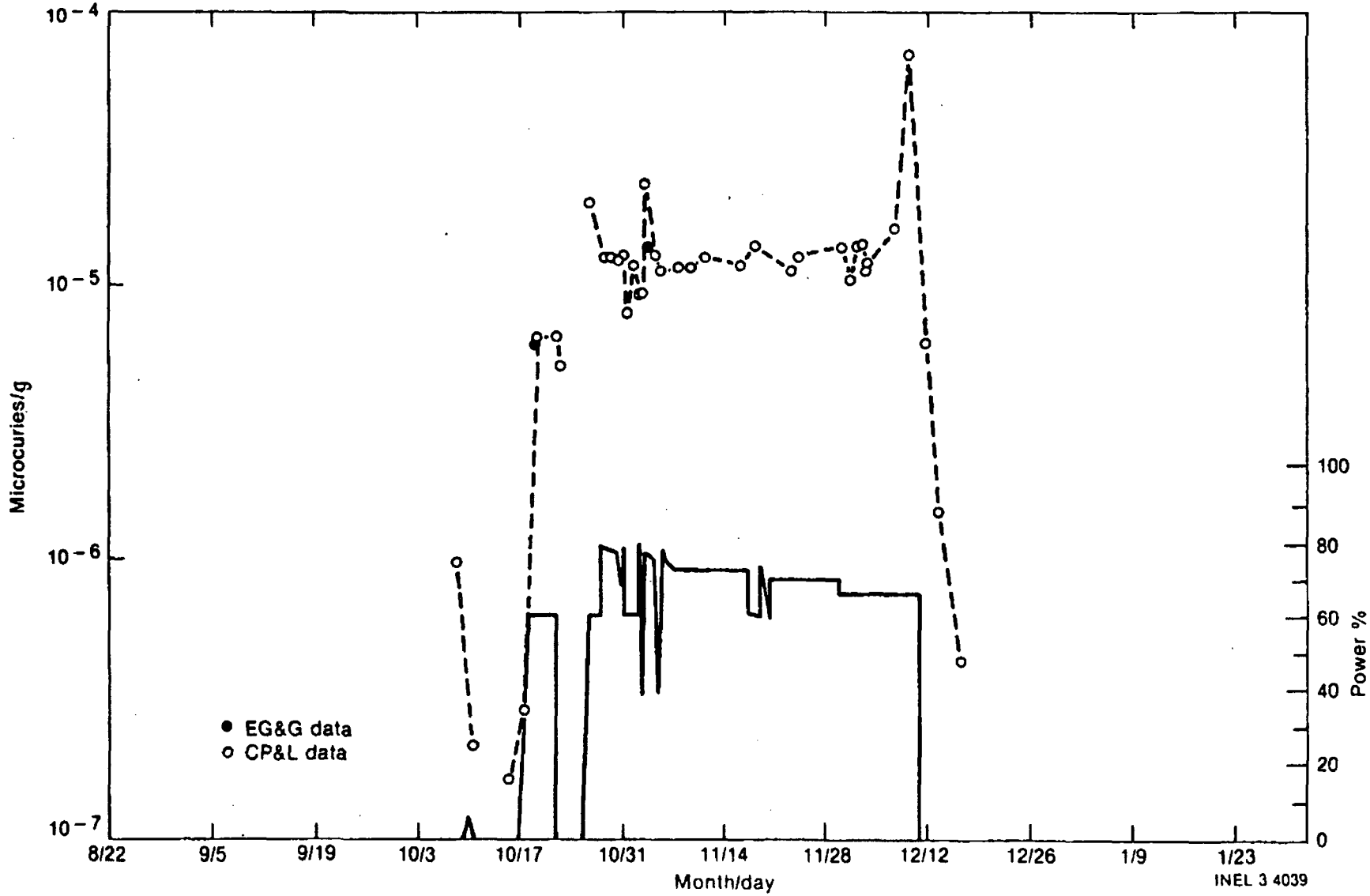


Figure 3-7. (Continued) Unit No. 1 Power History and ^{131}I Concentration

of ^{58}Co and ^{60}Co measured in June which is not understood. Industry reports[15] indicate that these particulate fractions are random between plants, and mechanisms for particulate formation have been proposed. However, they do not totally explain the differences observed in Unit No. 1 reactor coolant. All the radionuclides in the main stream were largely soluble.

Data from the main steam samples were used to calculate the ^{24}Na and radioiodine carryover fractions. Carryover fraction for a radionuclide is calculated by dividing the concentration in the main steam by the concentration in the reactor coolant with the result reported as percentage. Carryover fractions of ^{24}Na are indicative of particulate radionuclide transport and steam quality as the particulates are carried in moisture droplets entrained in the steam. The average ^{24}Na carryover fraction was 5.4(-3)% during the period from May 5, 1982, to June 8, 1982, and 1.9(-3)% on October 19, 1982 which indicates an average steam quality of 99.996 for the total sampling period. Carryover fractions of radioiodines were approximately 4.3% during the first sample period and 4.0% on October 19, 1982. These large carryover fractions when compared to the ^{24}Na values indicate that nearly all radioiodines leaving reactor coolant were either steam carried or volatile fractions. In his papers on BWR reactor coolant iodine chemistry, Lin[9,16] states that $H_2O \cdot I$ and HOI are believed to be the major steam carried and volatile iodine fractions. In Reference 9 the iodine carryover fractions in current generation BWRs are given as 0.2 to 2.5% based on pre-1979 data, which is a factor of 1.6 less than what was measured in Brunswick Unit No. 1. The increased iodine carryover fraction may be due to very low Cu^{++} concentrations in reactor coolant. Lin has determined a relationship of HOI formation and Cu^{++} concentration which shows that the volatile species is inversely proportional to the Cu^{++} concentration. Chemistry logs for October and November list Cu^{++} concentrations ranging from 0.007 to 0.08 ppb which, using Lin's relationship, could cause the carryover to vary from 1.5 to 6.0%. Therefore, the measured carryover fraction is in good agreement with Lin's predicted fraction based on Cu^{++} concentration. Data on Cu^{++} concentration prior to July 15, 1982 are similar to that measured in October and November.

Samples of RWCS inlet and RWCS FD "B" outlet were analyzed for iodine species. Iodine species were separated using the procedure described in Section 3.2.1.2. The iodine species data had large aqueous fractions as well as inconsistencies within duplicate samples and, therefore, will not be discussed. The data and calculated percent species are listed in Appendix Tables B.3-114 through B.3-116 for reader review.

Pure beta emitting radionuclide concentrations in reactor coolant are listed in Appendix Table B.3-119 for 1979 and 1982. The data show that ^{3}H varied little during the two years. Strontium concentrations did vary with time and the ratio of ^{89}Sr to ^{90}Sr varied with time; however as these results reflect only a single monthly sample, no evaluation of the data was performed.

Historical reactor coolant ^{131}I concentrations have been included in Appendix Table B.3-120 for the years 1976 through 1981. These values agree with those measured by researchers and in general, variations do not exceed a factor of 10.

3.2.1.2 Unit No. 2 RVS

Samples of reactor coolant from Unit No. 2 were obtained from either the RCS or RWCS sample points. These samples were obtained at least weekly from April 15, 1982 to May 1, 1982 and from September 17, 1982 to October 24, 1982. Samples were obatined more extensively during the shutdown and startup periods in order to characterize the radionuclide spikes. In addition, many samples were filtered to determine radionuclide fractions associated with particulate material. Main steam was only sampled twice between March 15, 1982 and April 11, 1982 as the facility personnel had indicated that representative samples could not be obtained at this sample point. Results of these analyses are tabulated in Appendix Tables B.3-10 through B.3-15 for RCS, RWCS, filtered RWCS, less frequently observed radionuclides in RCS and RWCS, main steam, and main steam less frequently observed radionuclides. Noble gas concentrations are not reported due to problems in obtaining representative samples. All sample locations are after the liquids have been processed through coolers and the pressure letdown; therefore, the noble gases cannot be assumed to be representative of the concentrations in the various systems.

Table 3.2 lists the average radionuclide concentrations in the reactor coolant measured during steady state power operations for the periods March 17, 1982 to April 20, 1982, October 24, 1982, and December 12, 1982 to January 28, 1983. Sample data from September 17, 1982 to October 24, 1982 were not averaged due to the infrequency of steady state power operations. The data taken on October 24, 1982 are after the unit had been at steady state power for three days. Data for the period December 12, 1982 to January 28, 1983 were obtained by CP&L. The radioiodine values are listed in Appendix Table B.3-112 and B.3-113. There are no significant differences noted between the pre- and post-refueling data. (See periods March 15, 1982 to May 1, 1982 and December 12, 1982 to January 28, 1983.) However, the October 24, 1982 data do show lower concentrations of the longer half-life radionuclides. This difference is attributed to the lack of prior steady state power conditions which would allow the longer-lived radionuclides to reach equilibrium conditions. The lack of difference from pre and post outage reactor coolant concentrations indicates that the fuel may not be the source of the fission products in coolant. See Section 3.5 for an expanded discussion.

Figure 3-8 shows the power level and ^{131}I concentration in the reactor coolant. Both CP&L and EG&G data are included. The connecting line does not indicate ^{131}I concentration between the data points but is used only to assist the reader. The shutdown spike on April 24, 1982 was followed by both CP&L and EG&G and will be discussed in Section 3.4. Spikes caused by startup and other power transients were not followed. However,

TABLE 3.2

UNIT NO. 2 AVERAGE RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT DURING REACTOR POWER OPERATIONS[a]
(microcuries/gram)

Nuclide	Measured During Period 3-17-82 to 4-20-82[b,c,e]	Measured[e] 10-24-82	Brunswick Data During Period[d] 12-12-82 to 1-28-83
^{84}Br	2.0 ± 0.2 (-2)	6.5 ± 0.8 (-3)	*
^{131}I	2.03 ± 0.04(-3)	2.0 ± 0.1 (-3)	1.5(-3)
^{132}I	5.25 ± 0.05(-2)	4.15 ± 0.03(-2)	3.9(-2)
^{133}I	2.46 ± 0.05(-2)	1.89 ± 0.01(-2)	2.4(-2)
^{134}I	1.71 ± 0.03(-1)	4.66 ± 0.05(-2)	1.4(-1)
^{135}I	5.68 ± 0.09(-2)	3.29 ± 0.03(-2)	5.3(-2)
^{89}Rb	1.1 ± 0.3 (-3)	<2(-2)	*
^{134}Cs	3.9 ± 0.1 (-5)[c]	<1(-4)	*
^{136}Cs	5.1 ± 0.4 (-5)[c]	<2(-4)	*
^{137}Cs	5.5 ± 0.4 (-5)[c]	<7(-4)	*
^{138}Cs	3.18 ± 0.07(-2)	4.6 ± 0.4 (-3)	2.2(-2)
^{139}Cs	<3(-2)	*	*
^{24}Na	2.77 ± 0.06(-2)	3.06 ± 0.04(-2)	6.5(-2)
^{51}Cr	3.42 ± 0.05(-2)	7.0 ± 0.4 (-3)	2.5(-2)
^{54}Mn	7.6 ± 0.2 (-5)	4.2 ± 0.7 (-4)	1.2(-3)
^{56}Mn	1.9 ± 0.5 (-3)	5.0 ± 0.5 (-3)	5.0(-4)
^{59}Fe	1.9 ± 0.4 (-5)	<7(-4)	*
^{58}Co	1.1 ± 0.2 (-4)	<9(-4)	1.4(-3)
^{60}Co	2.27 ± 0.04(-4)	6.0 ± 0.6 (-4)	2.4(-4)

TABLE 3.2 (CONT)

UNIT NO. 2 AVERAGE RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT DURING REACTOR POWER OPERATIONS[a]
(microcuries/gram)

Nuclide	Measured During Period 3-17-82 to 4-20-82[b,c,e]	Measured[e] 10-24-82	Brunswick Data During Period[d] 12-12-82 to 1-28-83
^{65}Zn	7.0 ± 0.3 (-5)	<2(-3)	*
^{91}Sr	8.4 ± 0.3 (-3)	1.81 ± 0.03(-2)	6.8(-3)
^{91m}Y	6 ± 3 (-4)	<2(-3)	*
^{93}Y	1.2 ± 0.4 (-3)	<3(-3)	*
^{95}Zr	<5(-6)	<2(-4)	*
^{95}Nb	<5(-6)	<2(-3)	1.6(-3)
^{99}Mo	5.87 ± 0.08(-3)	1.21 ± 0.03(-2)	1.4(-2)
^{103}Ru	4 ± 1 (-6)	<1(-4)	*
^{103}RuD	<4(-5)	4 ± 1 (-3)	*
^{110m}Ag	6 ± 1 (-6)	<3(-4)	*
^{124}Sb	<5(-6)	<2(-4)	*
^{125}Sb	1.7 ± 0.3 (-2)	<2(-3)	*
^{132}Te	<8(-5)	<2(-4)	*
^{139}Ba	2.94 ± 0.08(-2)	1.66 ± 0.04(-2)	3.8(-2)
^{140}Ba	1.5 ± 0.1 (-4)	6.0 ± 0.3 (-3)	*
^{140}La	1.80 ± 0.09(-3)	9 ± 4 (-5)	*
^{141}Ce	2.2 ± 0.4 (-5)	<3(-4)	*
^{143}Ce	2.0 ± 0.9 (-5)	<3(-4)	*
^{144}Ce	<3(-5)	<2(-2)	*
^{152}Eu	<2(-5)	<6(-4)	*
^{187}W	8 ± 4 (-5)	<8(-4)	*
^{239}Np	6.25 ± 0.09(-3)	1.75 ± 0.01(-2)	7.0(-3)

* Radionuclide not measured.

a. These average values include neither spike data nor less-than values averaged with real values.

TABLE 3.2 (CONT)

UNIT NO. 2 AVERAGE RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT DURING REACTOR POWER OPERATIONS[a]
(microcuries/gram)

b. Data obtained from the following samples (see Appendix Tables B.3-10 and B.3-11):

RCS	4-6-82	1041,	4-9-82	1520,	4-11-82	1004
RWCS	3-17-82	0810,	3-26-82	0834,	3-30-82	1557,
	4-20-82	1110.				

c. Data obtained 3/17/82 were not used because of spike effects.

d. CP&L did not report uncertainties.

e. Uncertainties are one sigma values.

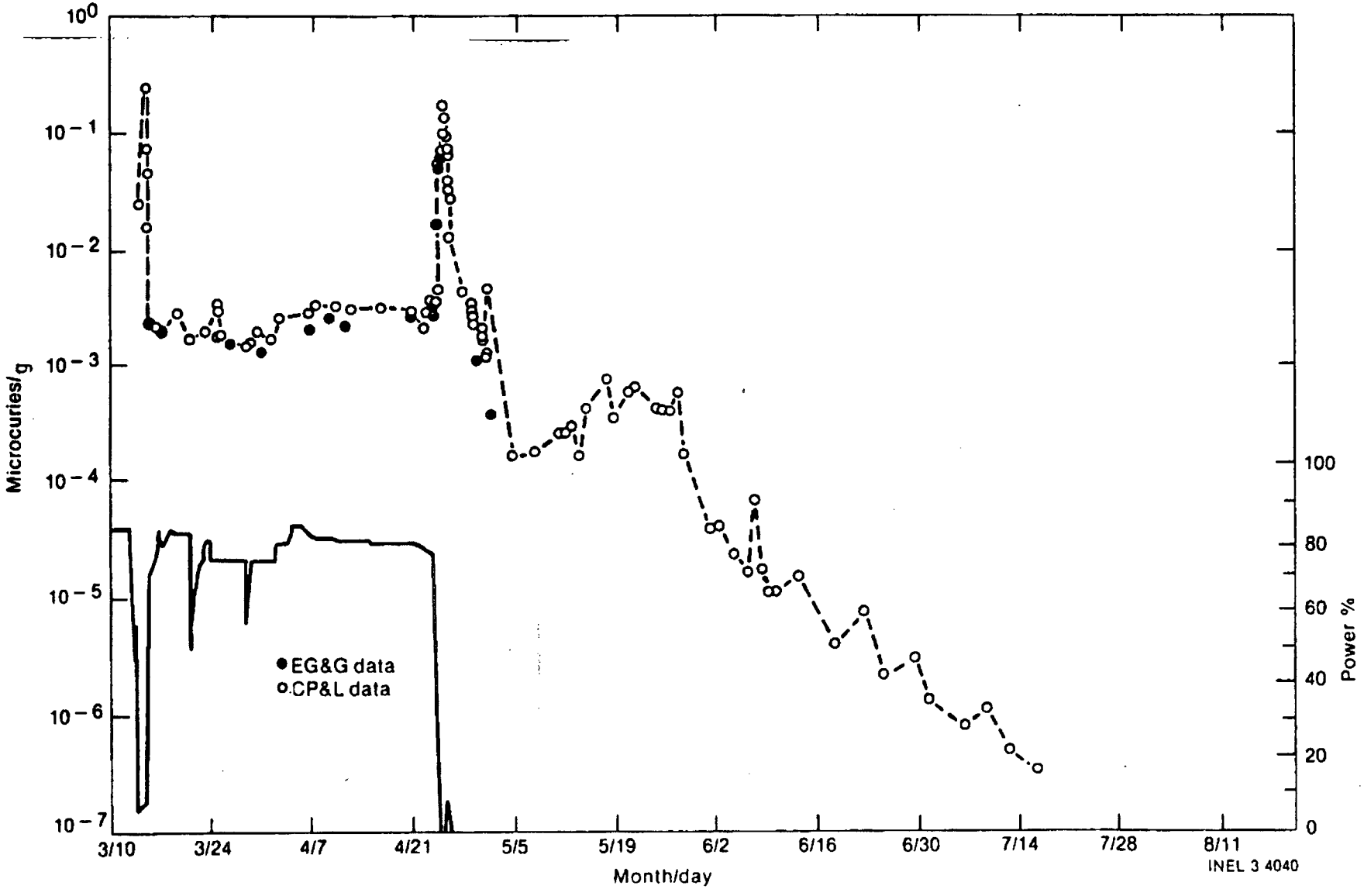


Figure 3-8. Unit No. 2 Power History and ^{131}I Concentration

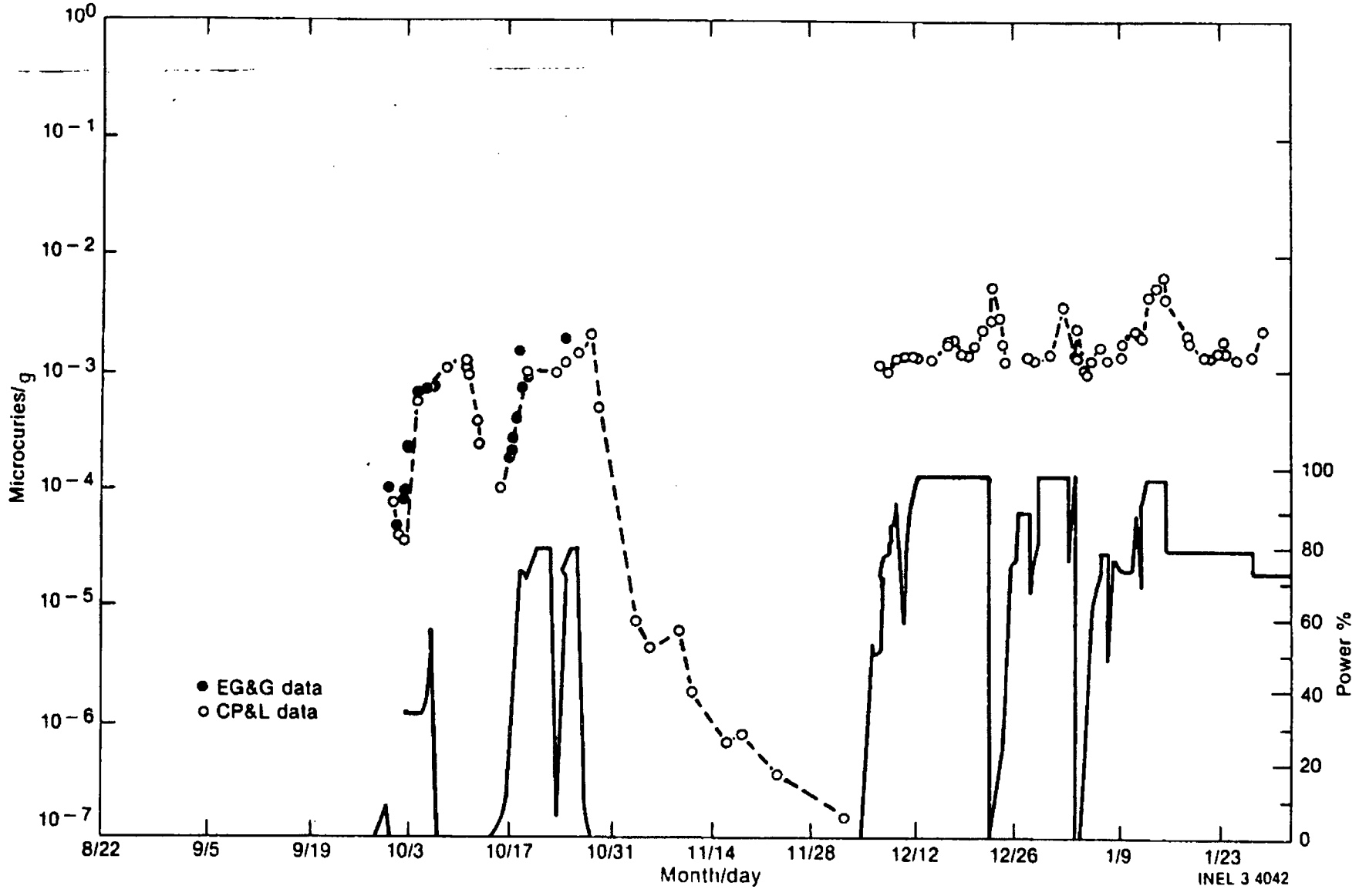


Figure 3-8. (Continued) Unit No. 2 Power History and ^{131}I Concentration

increased ^{131}I concentrations do correlate with the power transients as seen in Figure 3-8.

Concerning the less frequently observed radionuclides two points of interest are (a) the technetium radionuclides which have not been reported in PWR coolant and may reflect the differences in BWR and PWR coolant chemistry, and (b) the presence of ^{38}Cl which indicates sea water intrusion in the condenser/hotwell. The less frequently observed radionuclides were not observed to spike signi-icantly with reactor power changes. However, lack of observed spiking may only be due to sample frequency.

Data from filtered RWCS inlet (See Appendix Table B.3-16), are similar to Unit No. 1 data. Radioiodines, cesiums, and ^{24}Na were found to be soluble and the corrosion products were less soluble, ranging from ^{51}Cr at 1.4% particulate to ^{60}Co, ^{54}Mn, and ^{59}Fe at 28%, 57%, and 82% particulate, respectively. The same discrepancy between ^{58}Co and ^{60}Co, as noted for Unit No. 1 RCS was also observed in Unit No. 2; however, the differences are less pronounced. Also, as with Unit No. 1, the late September and October filterable fractions varied widely with the reactor power level. Data in Appendix Table B.3-12 span the shutdown of Unit No. 2 and therefore, caution should be used in interpreting these data.

Sample results of the main steam agree with the Licensee's evaluation of the main steam sample probe, i.e., it did not allow for representative sampling (see Section 3.6.1). Measured sample concentrations tended to be low for the noble gases and halogens, while for non-volatile radionuclides the concentrations were high. This phenomenon can be explained by selective sampling of the entrained water droplets in the steam. The non-volatile radionuclides have higher concentrations because these radionuclides are associated with the water droplets while the noble gases and halogens are associated more with the steam.

Calculated main steam values were obtained for ^{24}Na and ^{131}I, for the period April 7, 1982 to April 22, 1982, using the method described in Section 3.6.1. Carryover fractions of ^{24}Na and ^{131}I were then calculated using the methodology described in Section 3.2.1.1. Average ^{24}Na carryover fraction was 7.86(-2)% indicating a steam quality of 99.92%. Carryover fraction of radioiodine was 1.65%. This large carryover fraction when compared to the ^{24}Na, value indicates that about 5% of the radioiodine is in a nonvolatile form with the remaining 95% represented by volatile fractions (see the carryover discussion in Section 3.2.1.1). The radioiodine carryover fraction was within the range for the pre-1979 data for current generation BWRs.[9]

Pure beta emitting radionuclide concentrations in reactor coolant are listed in Appendix Table B.3-119 for 1979 and 1982. The data show that ^{3}H varied within a factor of 10, from 1.5(-4) to 1.4(-3), during the two

years and that the Unit No. 1 concentrations were similar. Strontium concentrations and the ratio of ^{89}Sr to ^{90}Sr varied with time; however, as these results reflect only a single sample during a month, no evaluation of the data was performed.

Historical reactor coolant ^{131}I concentrations have been included in Appendix Table B.3-120 for the years 1976 through 1981. Significant periods of reactor coolant concentration increases were observed on August 1976, June 1977, July 1979, and June 1981. The mid-1977 and mid-1981 concentrations agree with the reactor coolant concentrations measured during the in-plant study. Also, these data were used to substantiate the evaluation of the current fission product release mode discussed in Section 3.5.

Since iodine may exist in any of five chemical states in reactor coolant, (i.e., I^-, I_2, IO_3^-, IO_4^-, or CH_3I), studies were performed to characterize iodine species behavior for both steady state and power transient conditions by obtaining samples of RWCS FD inlet and/or outlet. Iodine species were determined using a chemical separation technique, which was a modification of the original work by C. C. Lin,[9] and gamma counting all separated fractions to determine radioiodine concentrations. The modified procedure, as used, contained a step which we now feel was inappropriate. This step was an initial acidification using nitric acid. The acidification was later shown to enhance the concentration of I_2 and CH_3I due to oxidation of the I^- fraction. After discussing our results with C. C. Lin,[16,17] a literature review, and confirmatory laboratory tests; it was decided that the I_2 and CH_3I fractions should be added to the I^- fraction. The resultant fraction is termed "I^- + other." This technique does not differentiate between IO_3^- and IO_4^-; and therefore, IO_3^- will be used to denote the sum of the two species as it is the more likely species. Appendix Tables B.3-117 and B.3-118 list the measured concentrations for the various iodine species. Tables 3.3 and 3.4 list the calculated fractional percents, Table 3.5 lists the RWCS species DFs, Figure 3-9 shows the percentage species changes during the power transient in the RWCS inlet and outlet,nd Figure 3-10 shows the absolute concentrations in RWCU inlet and outlet for ^{131}I. Significant power history has been included in Figures 3-9 and 3-10 to assist the reader. The aqueous phase fraction listed in Tables 3.3 through 3.5 and Appendix Tables B.3-117 and B.3-118 represents an unknown component which may be any of the five species listed above (most likely I^- or IO_3^-) which was not absorbed in the proper phase during the separation technique.

Results of the confirmatory laboratory studies allow for speculation that the I_2 and CH_3I fractions in the reactor coolant were small fractions of the total "I^- + other" fraction reported in the tables. Studies by other researchers give credence to this speculation where I_2 fractions have been

TABLE 3.3

UNIT NO. 2 AVERAGE PERCENT SPECIES IN REACTOR COOLANT

Date	Time	Reactor Power %	I^-+other %	IO_3^- %	Aqueous %
4-11-82	1003	80	66	26	8
4-23-82	1840	80	71	21	8
4-24-82	0430	0	33	61	6
4-24-82	0850	0	23	71	6
4-24-82	1154	<1	28	69	3
4-24-82	1534	5	31	65	4

TABLE 3.4

UNIT NO. 2 AVERAGE PERCENT SPECIES IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET

Date	Time	Reactor Power %	I^-+other %	IO_3^- %	Aqueous %
4-24-82	0430	0	21	72	7
4-24-82	0850	0	18	73	9
4-24-82	1157	<1	22	72	6
4-24-82	1529	5	18	81	1

TABLE 3.5

UNIT NO. 2 AVERAGE IODINE SPECIES DFs FOR REACTOR WATER CLEANUP FILTER DEMINERALIZER "A"

Date	Time	I^-+other	IO_3^-	Aqueous	Total
4-24-82	0430	5.8	3.4	3.7	4.0
4-24-82	0850	4.9	3.6	2.6	3.8
4-24-82	2254	10.2	7.9	3.5	8.1
4-24-82	1534	8.0	3.7	12.3	4.7

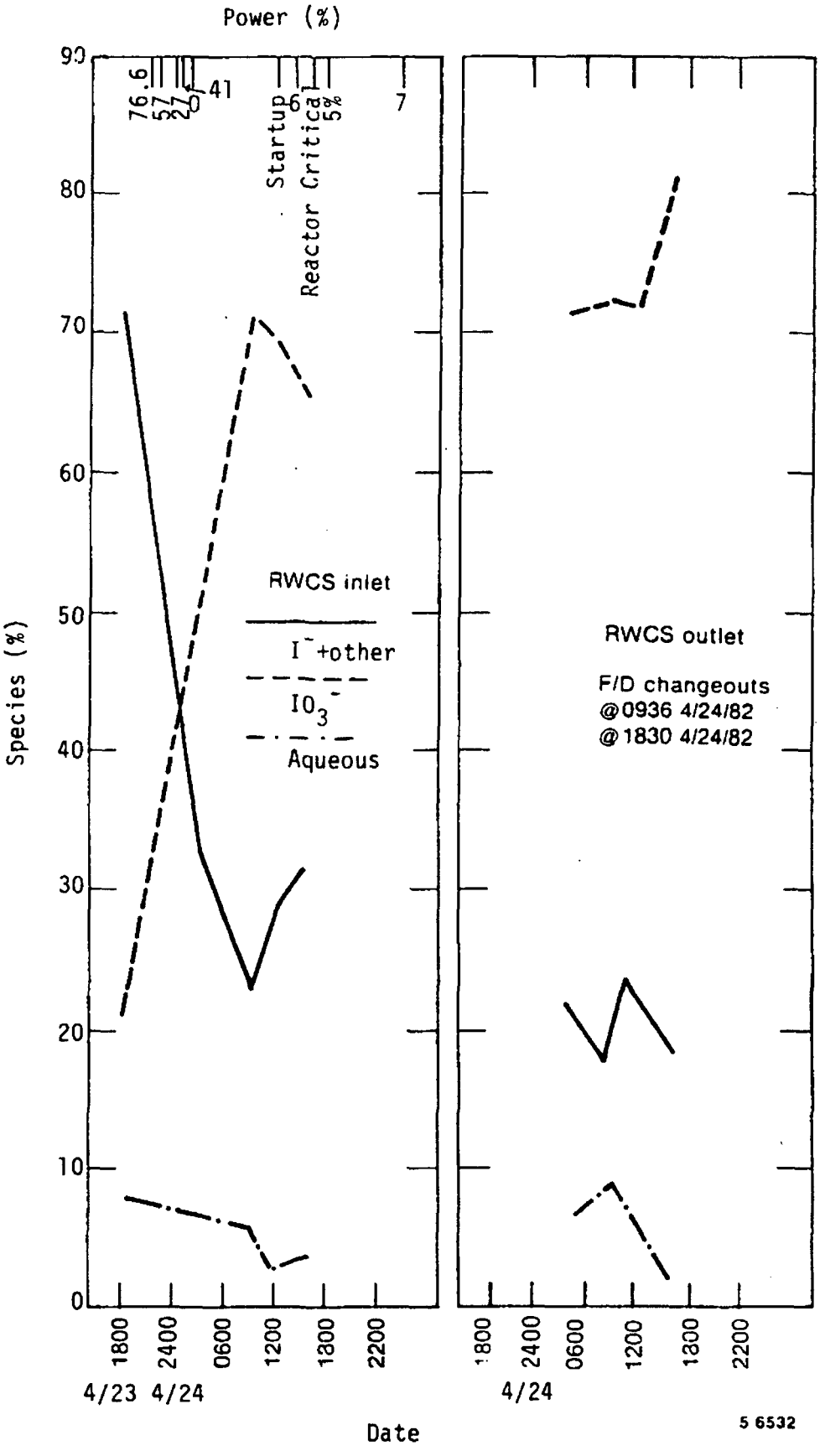


Figure 3-9. Iodine Species During Unit No. 2 Power Transient

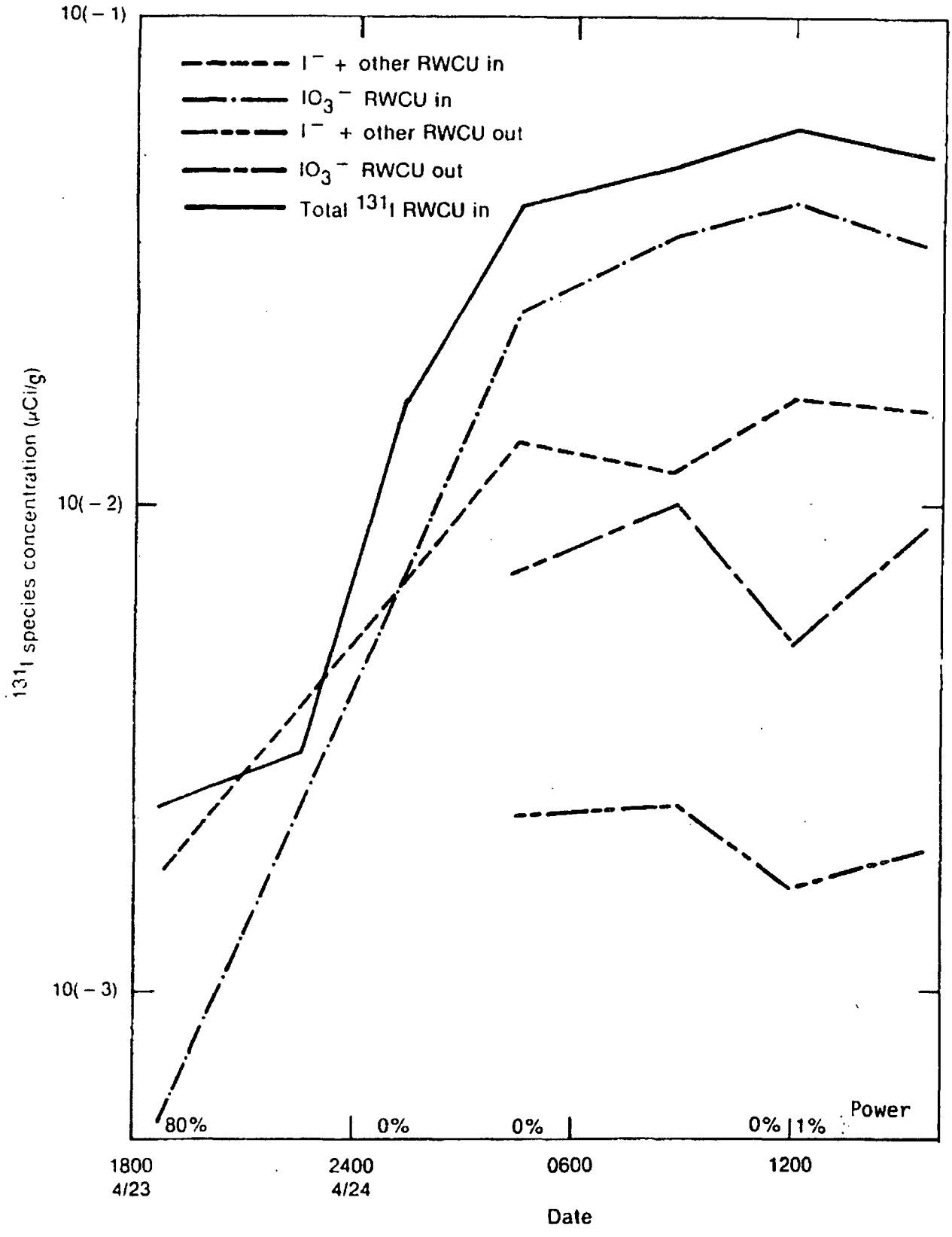


Figure 3-10. Iodine Species During Unit No. 2 Power Transient

listed at values in low percents and CH_3I fractions are less than one percent. Accepting the above argument, these results indicate that at steady state power the dominant species is I^-. During the power transient studied (i.e., shutdown for refueling), the iodine species changed dramatically with I^- and IO_3^- exchanging the dominant role. Note the change in species as the reactor power was increased starting at 1100 hours on April 24, 1982. These observations are consistent with current thinking on iodine species behavior which postulates that fission product iodine exists as I^- in the fuel pin gap. As the iodine migrates into the coolant via clad failures, the I^- can bind with any radical in the coolant to form IO_3^-, I_2, CH_3I, or HOI. Conditions in the core area at power are highly reducing and favor I^- as the dominant species. However as power is decreased, the environment becomes highly oxidizing and the other reactions increase with the formation of IO_3^- dominating early after shutdown. Iodine species in the RWCS FD outlet were similar in trend but different in magnitude to that observed in RWCS FD inlet samples. Lower fractions noted in the outlet are due to the removal efficiencies of the FD.

As seen in Table 3.5, the species DFs changed with the new precoated FD bed which was installed at 0900 hours on April 24, 1982 and was operated until 1830 on April 24, 1982. The change in DF can be attributed to the greater affinity of the new resin for different species of iodine.

3.2.2 Turbine System (TS)

Because of plant design, the turbine system of neither unit could be sampled during the measurement program at Brunswick. It was hoped that radionuclide changes could be characterized by sampling the influent and effluent streams. However, this hope was not fulfilled when it was learned that a) plant personnel felt the main steam probe in Unit No. 2 did not allow representative sampling and b) the hotwell was receiving blowdown from Unit No. 2 reactor at approximately 100 gpm. Mass balance calculations confirmed the opinion of the facility personnel (see Section 3.6.1). Studies in Unit No. 1 were not complicated by these factors. Mass balance, using the equation of Section 3.6.1, shows no apparent removal of radioiodines and activiation products by the HP or LP turbines. This evaluation is limited by the uncertainties in the measured radionuclides and system flow rates.

3.2.3 Condensate Cleanup System (CCS)

Condensate cleanup is effected at Brunswick by a bank of four condensate filter demineralizers (CFDs) and six condensate deepbed demineralizers (CDDs). Design information on both types of demineralizers is listed in Table 3.6. The primary function of this system is for chloride and conductivity control of condensate liquid by filtration and ion exchange. Spent resin from the CDDs was transferred to the radwaste system demineralizers to be used for radionuclide removal in radwaste liquid streams. This is discussed further in Section 4. Spent flocculant resin from the CFDs is transferred to the backwash storage tank prior to being dewatered by a vendor.

TABLE 3.6

DESIGN INFORMATION FOR THE CONDENSATE CLEANUP SYSTEM

Filter Demineralizer

Quantity	4	No. of Elements	420
Design Flow Rate	14,000 gpm total[a]	Surface Area	3.06 ft^2/element 1285 ft^2 total
Design Pressure	250 psig	Resin Volume	19 ft^3
Design Temperature	95°F normal 140°F max.	Normal Resin Types[b]	Epicor 21H Graver 202H
Type of Element	Flushable nylon core	Special Resin Type (for Iron Removal)	10:6:4 Mix of anion:cation:epicoat

Deepbed Demineralizer

Quantity	6	Bed Length	3 ft
Design Flow Rate	14,000 gpm total[a]	Bed Diameter	8.74 ft
Design Pressure	170 normal 234 psig max.	Resin Volume	180 ft^3
Design Temperature	95°F normal 140°F max.	Resin Type[b]	Graver GR-3

a. Maximum individual design flow unknown.
b. Mixed resin anion:cation.

3.2.3.1 Unit No. 1 CCS

Samples were obtained from the (a) CFD inlet header, (b) CFD outlet header, (c) CDD outlet header, (d) once on each individual CFD outlet and (e) once on each individual CDD outlet. Samples of CFD inlet and outlet were filtered using 0.45 μm filters in an attempt to determine what fractions of the radionuclide activities were in particulate form. Analysis results were then used to calculate DFs and particulate fractions. Sample results are listed in Appendix Tables B.3-17 through B.3-31 for the CFD inlet, filtered CFD inlet, CFD outlet, filtered CFD outlet, CDD outlet, CFD inlet and outlet less frequently observed radionuclides. Calculated CFD DFs and particulate fractions are listed in Appendix Tables B.3-32 through B.3-39. Due to the paucity of real value CDD inlet and outlet radionuclides, no DFs were calculated; however, the CDDs did effectively remove all observed radionuclides.

The median and range of DFs measured for the CFDs were: (a) 4 and 0.5 to >30 for radioiodines, (b) 0.8 and 0.01 to >2400 for ^{24}Na, (c) 3 and 0.1 to >33 for corrosion products and (d) >2 and >1 to >16 for bariums. With so few radionuclides detected in the CFD inlet and outlet filtered samples, it is difficult to draw conclusions from the data. However, generally most of the corrosion product activities were observed to be particulate form while the halogens appeared to be soluble.

3.2.3.2 Unit No. 2 CCS

Samples were obtained from the (a) CFD inlet header; (b) CFD outlet header; (c) CFD A, B, and D outlets: (d) CDD outlet header and (e) CDD A, B, C, and E outlets. Samples of CFD inlet and outlet, and CDD outlet were filtered using 0.45 m filters to determine what fractions of the activity were in particulate and soluble form. Results were used to calculate DFs and particulate fractions. Sample results are listed in Appendix Tables B.3-40 through B.3-65 for the CFD inlet, filtered CFD inlet, CFD outlet, filtered CFD outlet, CDD outlet, filtered CDD outlet, and less frequently observed radionuclides for CFD inlet, CFD outlet and CDD outlet. Appendix Tables B.3-121 through B.3-123 list the calculated particulate fractions for the CFDs. Measured DFs are listed in Appendix Tables B.3-66 through B.3-85 for the CFDs and CDDs. More radionuclides are listed in the tables for Unit No. 2 than Unit No. 1 due to the higher RCS radionuclide concentrations.

As expected, radioiodines, cesiums, and bariums were found to be largely soluble whereas the corrosion products tended to have a large particulate fraction. Particulate fractions ranged from 0.4 to 13.3% for the soluble radionuclides and from 10.6 to 85.4% for the corrosion products (see Appendix Tables B.3-121 through B.3-124). For the radionuclides which are largely soluble (i.e., radioiodines and cesiums), the CFD DFs showed a strong migratory trend as shown in Table 3.7. As the radioactive half-life increases, the trend is to smaller DFs thus indicating

TABLE 3.7

UNIT NO. 2 CFD DFs

Nuclide[a]	1982 Date						
	3-15	4-3	4-6	4-8	4-11	4-13	4-20
^{134}I	b	20	11	49	>24	35	22
^{132}I	11	18	9	32	32	23	16
^{135}I	7	14	7	22	74	15	10
^{133}I	3	11	5	14	14	10	7
^{131}I	0.7	6	4	9	8	5	6
^{138}Cs	b	4	3	10	b	6	3
^{136}Cs	2	2	1	4	b	2	<3
^{134}Cs	2	1	0.8	2	b	2	<3
^{137}Cs	2	1	0.6	2	2	1	<2
^{139}Ba	>3	18	11	32	15	20	9
^{140}Ba	10	10	11	40	>9	16	16
^{58}Co	4	5	3	7	3	7	<110
<110							
^{60}Co	4	6	4	8	>5	4	<4

a. Radioisotopes are ordered by increasing half-life.
b. No DF calculated.

that the nuclide is not being ionically bound to the resin but instead is moving from resin site to resin site through the bed. Corrosion product DFs on the other hand are a result of filtration action as seen in Appendix Tables B.3-70 through B.3-75 where the major concentration change is observed in the filtered fraction.

The median and range of DFs for the CFDs are (a) 8 and 0.4 to 74 for radioiodines, (b) 2 and 0.06 to 10 for cesiums, (c) 3 and 0.1 to <110 for corrosion products, (d) 7 and 0.07 to <400 for fission products and (e) 2 and 0.1 to 5 for ^{24}Na.

The DFs for the less frequently observed radionuclides were found to be similar to DFs observed for the longer half-life radionuclides. It appears that ^{38}Cl can be measured, allowing for calculation of a DF for the CFDs which might be used to determine resin material changeout.

Percentage filter fraction differences for CFD "B" and "D" on April 8, 1982 may be due to breakdown of the bed on CFD "B". Conductivity measurements show a factor of three difference between the two filter demineralizers, indicating that the ion exchange capacity of the CFD "B" had been lost, allowing the soluble fractions to be transported through the bed. This is evidenced by a decrease in the filterable fraction. The factor of ten difference between ^{58}Co and ^{60}Co on March 23, 1982 cannot be explained, however, concentrations of ^{58}Co and ^{60}Co have been previously reported[15] with similar differences in soluble fractions.

The CDDs removed all radionuclides to below detection limits with the exception of the radioiodines and cesiums. Radionuclide DF median values and ranges were (a) >88 and >2 to 1000 for radioiodines, (b) >8 and >2 to >680 for cesiums, (c) >290 and >10 to 500 for ^{24}Na, (d) >4 and <1 to >100 for corrosion products and (e) >7 and >2 to >250 for fission products. There were no significant differences noted in the individual CDDs sampled. Detailed analysis of the filter-filtrate data was not performed due to the large number of less-than values. However, the CFD outlet filter-filtrate data indicate that most radionuclides were soluble species and would, therefore, be readily removed by ion exchange action in the CDDs. High ^{131}I and ^{132}I values reported for CDD "C" outlet on April 29, 1982, are due to bed deterioration which agrees with CDD "C" conductivity measurements.

3.2.4 Feedwater System (FS)

Feedwater has two sources of radionuclides, the condensate cleanup system (CCS) effluent and the heater drains deaerator tank (HDDT) outlet. As discussed in Section 3.2.3, the CCS in both units lowered all radionuclide concentrations to insignificant quantities and, therefore, the CCS influent can be treated as a dilution stream. All radioactivity observed in the feedwater is, therefore, a function of the HDDT outlet being diluted by the CCS.

3.2.4.1 Unit No. 1 FS

Samples were obtained in Unit No. 1 from the HDDT outlet and the feedwater. Some of the feedwater samples were filtered to determine what fraction of the radionuclides was in particulate form. Results are tabulated in Appendix Tables B.3-86 through B.3-88 for the HDDT outlet, feedwater and filtered feedwater, respectively. Feedwater radionuclide concentrations were found to be small fractions of the RCS radionuclide concentrations. However, the rate of movement into the reactor vessel, in μCi/hr, accounts for nearly 40% of the required rate of production to maintain radionuclide concentrations at equilibrium in the reactor vessel for radioiodines and cesiums. These calculations were performed using the methodology of Section 3.6.1. Data from filtered feedwater are inconclusive and, therefore, will not be discussed. In all cases, the radionuclide concentrations in the feedwater and HDDT outlet were lower after the July 17 to October 3 outage of Unit No. 1.

The observed feedwater radionuclide concentrations are due to two different sources. One source is the CCS effluent and the other the HDDT effluent. However, as the CCS effluent activities were below or near the detectable limit, the activity measured in the feedwater must largely be due to the HDDT discharge into the feedwater. Therefore, the ratio of the HDDT-to-Feedwater radionuclide concentrations is a measure of the amount of flow processing though the pump-forward system. This calculation was performed for Unit No. 1 and the resultant value was 3 indicating that about 33 percent of the feedwater flow was from the pump-forward system.

3.2.4.2 Unit No. 2 FS

Samples were obtained in Unit No. 2 from the HDDT outlet and the feedwater. Some feedwater samples during the period March 15, 1982 to April 29, 1982 were filtered using 0.45 μm filters and 50 ml samples during the period September 28, 1982 to October 20, 1982 were also filtered through 0.45 μm filters. A few HDDT outlet samples during the period September 28, 1982 to October 20, 1982 were also filtered through 0.45 m filters. Resulting data are tabulated in Appendix Tables B.3-89 through B.3-94 for the HDDT outlet, filtered HDDT outlet, feedwater, filtered feedwater and less frequently observed radionuclides.

As was the case with Unit No. 1, the feedwater radionuclide concentrations were small compared with the RCS concentrations. They contribute 37% of the required rate of production to maintain the equilibrium RCS inventory for radioiodines and cesiums. Filtered feedwater data from the March 15, 1982 to April 29, 1982 time period show similar fractions of radionuclides in particulate form as was observed in the CFD inlet for Unit No. 2, indicating the inlet to the HDDT does not contain a significantly different particulate fraction of radionuclide concentrations than that which was measured out of the hotwell. However, as reactor coolant was blown down to the hotwell during the sampling period, this observation is inconclusive as to what the particulate fraction going to the LP turbines was. The filtered data, both feedwater and HDDT outlet from September 28, 1982,

to October 20, 1982, are inconclusive and will not be discussed. A ratio of the HDDT-to-feedwater radionuclide concentrations was calculated with a resultant value of 5, which indicates that approximately 20% of the total feedwater flow was processed through the pump forward system. This indicates that the fractional amount of main steam being processed through the pump forward system is different for the two units. In all cases, the radionuclide concentrations in the feedwater and HDDT outlet were lower immediately after the refueling outage but appeared to be increasing with time back to pre-outage levels.

3.2.5 Reactor Water Cleanup System (RWCS)

Both Unit No. 1 and No. 2 have the same equipment in the RWCS FD. The FD is manufactured by DeLaval and is composed of 245 Johnson Strainer filter elements with a total of 270 square feet of surface area. Two cubic feet of either Epicor 21H or Graver 202H mixed powdered resin is used to precoat the filter elements. The FD functions are the same as all the FDs in the radwaste system in that they act both as a filter and a demineralizer.

3.2.5.1 Unit No. 1 RWCS

In Unit No. 1, the RWCS FD was operated nearly 90% of the time between March 15, 1982 to July 15, 1982 and September 27, 1982 to November 3, 1982 to maintain reactor water quality. Samples of the inlet and outlet liquid were obtained and analyzed. A few samples from the September 27 to November 3 period were filtered through 0.45 μm filters. Results are tabulated in Appendix Tables B.3-3 and B.3-4 for the RWCS inlet and filtered RWCS inlet and in Appendix Tables B.3-95 through B.3-97 for the RWCS outlet and filtered RWCS outlet. Results of water chemistry measurements (i.e., conductivity, pH, Cl^-, SiO_2 and suspended solids) of the inlet and outlet liquids, made by CP&L personnel, were used in our evaluation of the Unit No. 1 RWCS. Reactor operator logs indicate that the FD was backwashed and precoated on the average every 3.5 days with the range being one to eight days.

Decontamination factors were calculated for the observed radionuclides and are listed in Tables 3.8 and 3.9. There were no significant changes in radionuclide concentrations during the sample period March 15 to July 15 except on May 5, 1982 when they increased due to a shutdown spike. However, there were changes during the sample period September 27 to November 3 when Unit No. 1 started up after the outage. Radionuclide concentrations became equal to pre-outage levels around October 15, 1982. The median and range of the measured DFs during the total time period were (a) >9 and < 0.8 to 26 for ^{131}I, (b) 11 and 8 to 21 for ^{134}I, (c) 6 and < 0.7 to 10 for ^{137}Cs, (d) 21 and 7 to 27 for ^{24}Na, (e) 27 and 4 to 47 for ^{54}Mn and (f) 28 and 3 to 37 for ^{60}Co. The trend of the radioiodine, cesium, and corrosion product DFs on May 5, 1982 show a slight increase which may be caused by the increase in inlet radionuclide concentrations. However, as the shutdown

TABLE 3.8

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 5-5-82 0900
^{84}Br	c
^{131}I	1.1 ± 0.6 (1)
^{132}I	7 ± 2 (1)
^{133}I	1.8 ± 0.8 (1)
^{134}I	8 ± 2
^{135}I	c
^{134}Cs	c
^{137}Cs	>3
^{138}Cs	c
^{24}Na	2.52 ± 0.07(1)
^{51}Cr	3.46 ± 0.04(1)
^{54}Mn	8.3 ± 0.1 (1)
^{56}Mn	4.2 ± 0.1 (2)
^{59}Fe	1.73 ± 0.04(2)
^{58}Co	6.7 ± 0.2 (1)
^{60}Co	5.13 ± 0.09(1)
^{65}Zn	4.3 ± 0.8 (1)
^{91m}Y	>31
^{95}Zr	>12
^{95}Nb	>53
^{99}Mo	c
^{103}Ru	c
^{110m}Ag	1.7 ± 0.2 (2)
^{124}Sb	>27
^{139}Ba	>16

TABLE 3.8 (CONT)

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "A"

Nuclide	Date and Time 5-5-82 0900
^{140}Ba	c
^{140}La	>17
^{141}Ce	c
^{143}Ce	c
^{187}W	>1.2(2)

c. Inlet and outlet values are both less-thans.

TABLE 3.9

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time					
	5-5-82 0902	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0908
^{84}Br	c	c	c	c	c	c
^{131}I	<8(-1)	>14	1.3 ± 0.6 (1)	1.6 ± 0.7 (1)	>3	1.8 ± 0.9
^{132}I	2.8 ± 0.7 (1)	>6	5 ± 2 (1)	3.1 ± 0.6 (1)	3.0 ± 0.3 (1)	1.7 ± 0.2 (1)
^{133}I	>5	>10	c	c	c	2.3 ± 0.7 (1)
^{134}I	8 ± 1	c	>5	c	4 ± 1 (1)	2.1 ± 0.5 (1)
^{135}I	c	c	c	c	c	>17
^{88}Rb	d	d	d	d	d	d
^{89}Rb	d	d	d	d	d	d
^{134}Cs	c	<7	c	>8	c	>2
^{136}Cs	d	d	d	d	d	d
^{137}Cs	<7(-1)	1.0 ± 0.4 (1)	>10	c	c	>6
^{138}Cs	c	c	c	c	c	>7
^{139}Cs	d	d	d	d	d	d
^{24}Na	2.67 ± 0.06(1)	2.39 ± 0.05(1)	2.10 ± 0.05(1)	2.28 ± 0.07(1)	1.33 ± 0.03(1)	2.33 ± 0.06(1)
^{51}Cr	2.4 ± 0.1 (1)	1.89 ± 0.03(1)	1.8 ± 0.1 (1)	1.35 ± 0.04(1)	2.77 ± 0.02(1)	2.00 ± 0.03(1)
^{54}Mn	3.5 ± 0.1 (1)	2.68 ± 0.04(1)	3.4 ± 0.1 (1)	3.51 ± 0.05(1)	2.15 ± 0.04(1)	2.5 ± 0.3 (1)
^{56}Mn	5.50 ± 0.08(1)	3.24 ± 0.08(1)	3.58 ± 0.07(1)	3.74 ± 0.05(1)	3.1 ± 0.2 (1)	2.78 ± 0.08(1)
^{59}Fe	3.5 ± 0.2 (1)	2.17 ± 0.06(1)	3.9 ± 0.3 (1)	3.7 ± 0.4 (1)	2.2 ± 0.1 (1)	3 ± 1 (1)

TABLE 3.9 (CONT)

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time					
	5-5-82 0902	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0908
^{57}Co	d	d	d	d	d	d
^{58}Co	3.5 ± 0.2 (1)	2.79 ± 0.06(1)	3.13 ± 0.05(1)	3.30 ± 0.05(1)	2.8 ± 0.1 (1)	2.5 ± 0.1 (1)
^{60}Co	2.9 ± 0.1 (1)	2.85 ± 0.06(1)	3.3 ± 0.2 (1)	3.31 ± 0.06(1)	2.73 ± 0.07(1)	2.8 ± 0.2 (1)
^{65}Zn	>7	>16	>8	>5	2.3 ± 0.1 (1)	>5
^{91}Sr	d	d	d	d	d	d
^{91m}Y	>7	>14	4 ± 2	c	c	c
^{93}Y	d	d	d	d	d	d
^{95}Zr	>4	>5	>10	c	c	c
^{95}Nb	>2	c	>30	c	c	c
^{99}Mo	c	>8	>5	>14	3 ± 1 (2)	2.9 ± 0.9
^{103}Ru	c	>5	2.3 ± 0.5 (1)	>21	>24	c
^{106}RuD	d	d	d	d	d	d
^{110m}Ag	<7(-1)	<13	6.7 ± 0.8	1.1 ± 0.2 (2)	1.2 ± 0.2 (1)	3.1 ± 0.8
^{124}Sb	>6	6 ± 3	>8	>6	>1	c
^{125}Sb	d	d	d	d	d	d
^{129m}Te	d	d	d	d	d	d
^{129}Te	d	d	d	d	d	d
^{131m}Te	d	d	d	d	d	d
^{131}Te	d	d	d	d	d	d
^{132}Te	d	d	d	d	d	d

TABLE 3.9 (CONT)

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time					
	5-5-82 0902	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0908
^{139}Ba	>8	c	c	c	c	c
^{140}Ba	c	>10	4 ± 2 (2)	>17	6 ± 2	c
^{140}La	>3	c	c	<13	c	4 ± 2
^{141}Ce	c	c	c	c	c	c
^{143}Ce	<1	c	c	c	c	c
^{144}Ce	d	d	d	d	d	d
^{152}Eu	d	d	d	d	d	d
^{154}Eu	d	d	d	d	d	d
^{155}Eu	d	d	d	d	d	d
^{187}W	3.0 ± 0.4 (1)	1.8 ± 0.5 (1)	2.4 ± 0.5 (1)	9 ± 3	>10	c
^{239}Np	d	d	d	d	d	d

c. Inlet and outlet values are both less-thans.

d. DF not calculated because input and/or output was not measured.

TABLE 3.9 (CONT)

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time					
	5-18-82 1256	5-25-82 1314	6-1-82 0910	6-7-82 1051	6-16-82 1207	7-1-82 0935[e]
^{84}Br	<16	c	c	c	c	d
^{131}I	1.0 ± 0.4 (1)	>9	>4	>6	>3	2.6 ± 0.7 (1)
^{132}I	1.6 ± 0.2 (1)	3.0 ± 0.7 (1)	>10	5 ± 1 (1)	9 ± 1	>5
^{133}I	1.4 ± 0.2 (1)	2.1 ± 0.2 (1)	6 ± 2	3.6 ± 0.4 (1)	7 ± 1	2.1 ± 0.8 (1)
^{134}I	1.6 ± 0.5 (1)	>10	1.6 ± 0.3 (1)	1.5 ± 0.1 (1)	1.1 ± 0.2 (1)	>9
^{135}I	>6	2.0 ± 0.7 (1)	>4	<12	5 ± 1	c
^{88}Rb	d	d	d	d	d	d
^{89}Rb	d	d	d	d	d	d
^{134}Cs	d	d	d	d	d	d
^{136}Cs	d	d	d	d	d	d
^{137}Cs	c	c	c	c	c	>5
^{138}Cs	c	c	>3	c	c	c
^{139}Cs	d	d	d	d	d	d
^{24}Na	1.86 ± 0.02(1)	1.96 ± 0.03(1)	7.3 ± 0.1	2.27 ± 0.03(1)	1.18 ± 0.02(1)	2.1 ± 0.2 (1)
^{51}Cr	1.98 ± 0.02(1)	3.71 ± 0.05(1)	1.31 ± 0.02(1)	2.07 ± 0.04(1)	1.45 ± 0.06(1)	2.03 ± 0.03(1)
^{54}Mn	1.8 ± 0.1 (1)	4.7 ± 0.8 (1)	3.0 ± 0.4 (1)	1.4 ± 0.2 (1)	1.7 ± 0.1 (1)	3.6 ± 0.3
^{56}Mn	7.5 ± 0.3	1.7 ± 0.2 (1)	2.1 ± 0.3 (1)	1.5 ± 0.2 (1)	2.1 ± 0.1 (1)	>15
^{59}Fe	c	>5	4 ± 2 (1)	>13	>28	1.9 ± 0.1

TABLE 3.9 (CONT)

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 5-18-82 1256	5-25-82 1314	6-1-82 0910	6-7-82 1051	6-16-82 1207	7-1-82 0935[e]
^{57}Co	c	>2	c	c	c	d
^{58}Co	2.0 ± 0.1 (1)	4 ± 1 (1)	3.0 ± 0.5 (1)	1.6 ± 0.2 (1)	1.8 ± 0.2 (1)	4.7 ± 0.3
^{60}Co	1.8 ± 0.3 (1)	3.7 ± 0.8 (1)	3 ± 1 (1)	2.2 ± 0.3 (1)	1.6 ± 0.1 (1)	3.3 ± 0.1
^{65}Zn	>10	>5	c	c	>11	<4
^{91}Sr	d	d	d	d	d	d
^{91m}Y	c	>3	c	c	c	c
^{93}Y	d	d	d	d	d	d
^{95}Zr	d	d	d	d	d	d
^{95}Nb	d	d	d	d	d	d
^{99}Mo	>6	>13	>5	>16	c	>5
^{103}Ru	d	d	d	d	d	d
^{106}RuD	d	d	d	d	d	d
^{110m}Ag	5 ± 1 (1)	2.2 ± 0.9 (1)	1.1 ± 0.2 (1)	<8(-1)	9 ± 2	5 ± 1
^{124}Sb	>6	6 ± 3	>8	>6	>1	c
^{125}Sb	d	d	d	d	d	d
^{129m}Te	d	d	d	d	d	d
^{129}Te	d	d	d	d	d	d
^{131m}Te	d	d	d	d	d	d
^{131}Te	d	d	d	d	d	d
^{132}Te	d	d	d	d	d	d

TABLE 3.9 (CONT)

DFs UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 5-18-82 1256	5-25-82 1314	6-1-82 0910	6-7-82 1051	6-16-82 1207	7-1-82 0935 [e]
^{139}Ba	>4	>2	>6	2 ± 1 (1)	>3	c
^{140}Ba	d	d	d	d	d	d
^{140}La	d	d	d	d	d	d
^{141}Ce	d	d	d	d	d	d
^{143}Ce	d	d	d	d	d	d
^{144}Ce	d	d	d	d	d	d
^{152}Eu	d	d	d	d	d	d
^{154}Eu	d	d	d	d	d	d
^{155}Eu	d	d	d	d	d	d
^{187}W	c	>20	>2	>16	>3	c
^{239}Np	d	d	d	d	d	d

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

e. RCS values were used to calculate DF's.

spike was not followed in detail, no further discussion will be made of these data as it relates to DFs. All other DFs measured are on different precoats of RWCS FD "B". Unit No. 1 RWCS FD DFs were observed to be larger than those measured for Unit No. 2 and may be attributed to better operation of the FD.

Results of filtered sample measurements (Appendix Tables B.3-98 and B.3-99) indicate an increase in the particulate fraction downstream of the FD for all corrosion products. This may be due to resin fines breaking through the support screens which is coated with radioactive particulates which have a higher activity concentration, than do particulates in the inlet water. The differences between inlet and outlet fractions could easily be caused by this mechanism, therefore, this is not a good indicator of loss of bed integrity.

3.2.5.2 Unit No. 2 RWCS

During the in-plant measurement period the RWCS FD for Unit No. 2 was used only immediately before and during the shutdown for refueling. Therefore, the data obtained are not characteristic of steady state power. Samples of the inlet and outlet liquid were taken by both CP&L and EG&G Idaho personnel. Analysis results are listed in Appendix Tables B.3-11 and B.3-100 to B.3-103. Results of water chemistry measurements (i.e., conductivity, pH, Cl^-, SiO_2, and suspended solids) of the inlet and outlet liquids determined by CP&L are included in Table 3.10. During the shutdown, samples of the inlet and outlet liquids were filtered through 0.45 μm filters and the two fractions were counted. The resulting data are listed in Appendix Tables B.3-12 and B.3-104. Operational history of the FD and other pertinent data are listed in Table 3.11. Note that the inservice FD which was used from April 22 until April 24 at 0907 hours was not backwashed and precoated but was recirculated for 29 minutes before being returned to service.

Decontamination factors (DFs) were measured for conductivity, radioiodines, cesiums, activation products, filterable radionuclides, and soluble radionuclides. The filtered sample results were also used to calculate the percent filterable fraction for the different radionuclides. Percent filterable fractions are listed in Appendix Tables B.3-16 and B.3-105 for the inlet and outlet, respectively, and the DFs are listed in Appendix Tables B.3-106 through B.3-110. Figures 3-11 through 3-22 show the change in DF with time for conductivity, selected radionuclides and the filterable and soluble radionuclide fractions. Note that BD on the figures indicates blowdown to the condenser, while the line indicates the trend of the DFs.

Filtered fractions for the RWCS inlet did not show any significant changes in the corrosion products with the initiation of shutdown on April 23, 1982, at 2233, nor on April 24, 1982, at 1143 when the reactor was returned to critical condition in preparation for going to 7% power.

TABLE 3.10

UNIT NO. 2 RWCS CHEMICAL HISTORY

Date	Time	pH	ppb			Conductivity	
			Suspended Solids	Cl^-	SiO_2	Inlet	Outlet
4-22	0030	6.8	<10	<50	130	a	a
	0815	a	<10	a	<30	a	a
	0913	7.4	<10	<50	135	.461	.087
	1604	7.5	<10	<50	150	.442	.098
4-23	0022	7.4	<10	<50	170	.461	.112
	1025	a	a	a	175	.459	.130
	1634	a	a	<50	190	.472	.150
	2030	7.5	a	a	a	.489	.166
4-22	0043	6.0	<10	<50	290	.519	.184
	0505	7.3	a	a	a	.449	.195
	0710	7.1	a	a	a	.444	.193
	0810	7.2	a	a	a	.449	.193
	1010	7.0	<10	80	270	.446	.093
	1215	7.3	a	a	a	.469	.125
	1410	7.3	a	a	a	.432	.127
	1810	7.3	a	a	a	.368	.117
	1953	7.4	<10	<50	190	.362	a
	2135	7.2	a	a	a	.339	.093
4-25	0100	6.7	25	<50	150	.318	.103
	0720	7.3	a	a	a	.248	.096
	0906	7.3	<10	<50	100	.209	.102
	1330	7.6	a	a	a	.268	a
	1455	7.6	a	a	a	.275	a
	1655	7.6	150	<50	40	.281	a
	2058	6.2	a	a	a	.402	a
4-26	0227	6.3	50	<50	<30	.445	a
	0910	7.1	<10	<50	<30	.128	a
	1300	7.1	a	a	a	.125	a
	1720	7.3	<10	<50	<30	.133	a
4-27	0429	7.4	25	<50	<30	.149	a
	0941	7.3	75	<50	<30	.243	a
	1536	7.4	a	a	a	.310	a
	1755	7.9	25	<50	<30	.329	a
	1937	7.9	a	a	a	.369	.158
4-28	0136	a	<10	<50	<30	.390	.151
	1110	a	a	<50	<30	.483	.179
	1209	7.4	1000	a	a	.502	.215
	1337	7.4	1000	a	a	.533	.228
	1532	7.5	750	a	a	.478	.226
	1735	6.6	250	<50	<30	.474	.229
	2125	7.6	450	a	a	.418	.207
4-29	0126	7.4	250	<50	<30	.372	.201

a. No data available.

TABLE 3.11

UNIT NO. 2 RWCS F D HISTORY

Date	Time	Comment
4-22-82	0648	Newly precoated FD placed in service. Effluent sent to condenser. Flow rate 106 gpm.
	1000	Effluent returned to reactor vessel.
4-24-82	0907	FD taken out of service to backwash and precoat.
	0936	FD returned to service without backwashing or precoating because of lack of storage in BWST. Effluent sent to condenser.
	1010	Effluent returned to reactor vessel.
	1830	FD taken out of service to backwash and precoat.
	1953	Newly precoated FD placed in service. Effluent sent to condenser.
	2135	Effluent returned to reactor vessel.
4-25-82	0843	Effluent returned to condenser.
	1018	FD taken out of service. RWCS inlet sent to condenser.
4-26-82	0051	RWCS isolated, no effluent to condenser.
	0132	RWCS inlet sent to condenser, flow rate 75 gpm.
4-27-82	1802	Newly precoated FD placed in service. Effluent sent to condenser.
4-29-82	0845	Effluent returned to reactor vessel.

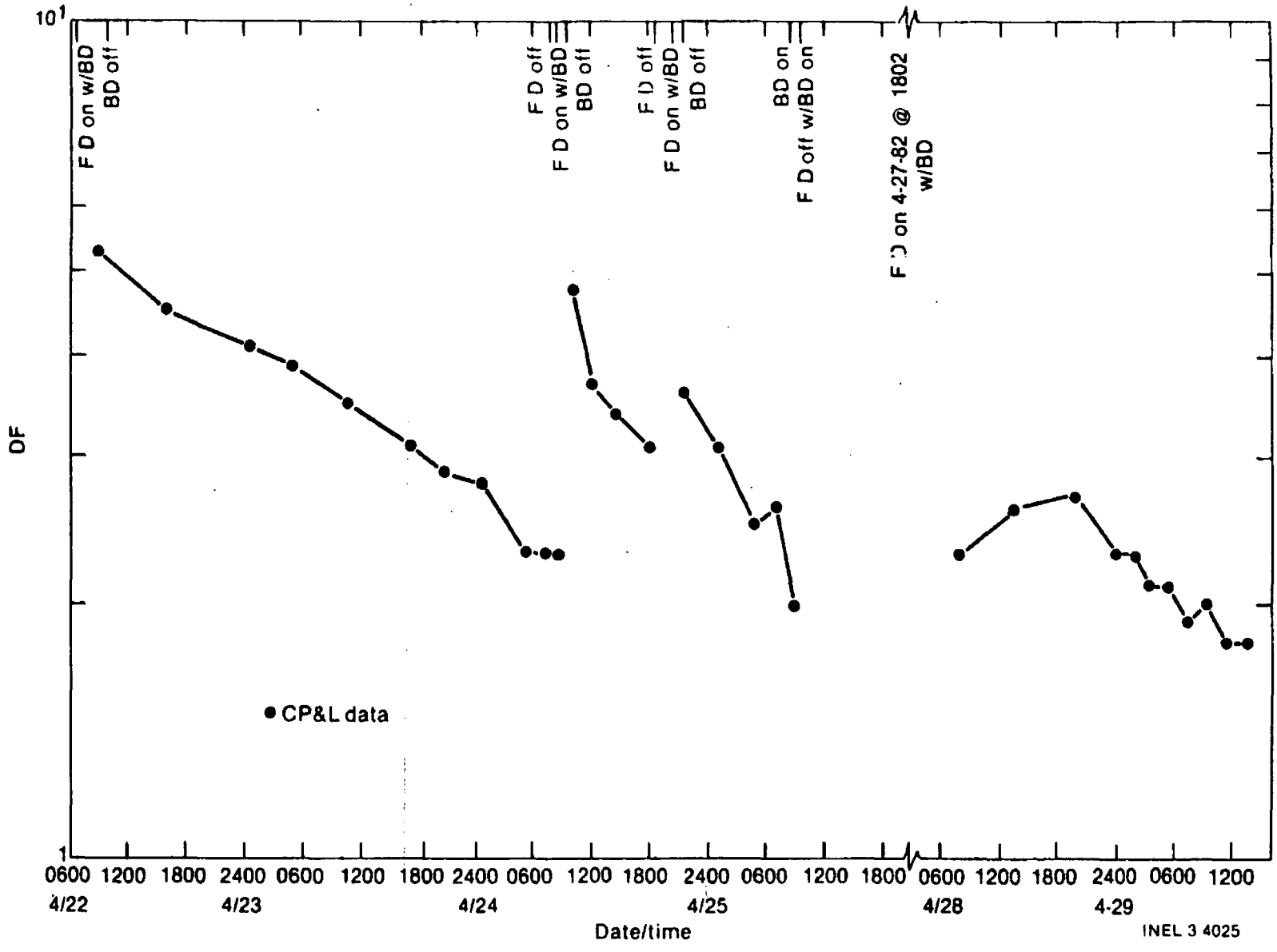


Figure 3-11. DF for Unit No. 2 RWCS Conductivity

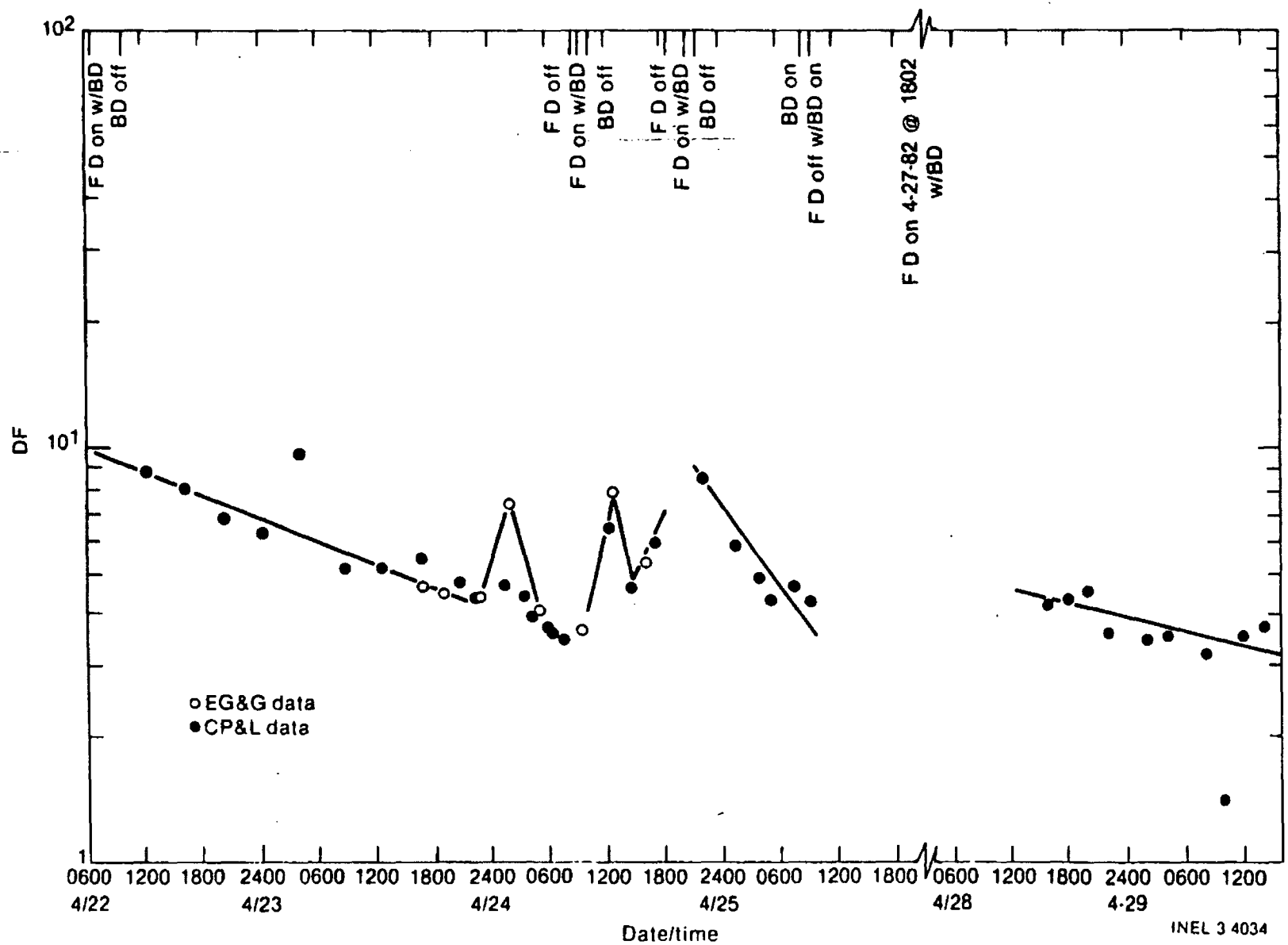


Figure 3-12. ^{131}I DF for Unit No. 2 RWCS

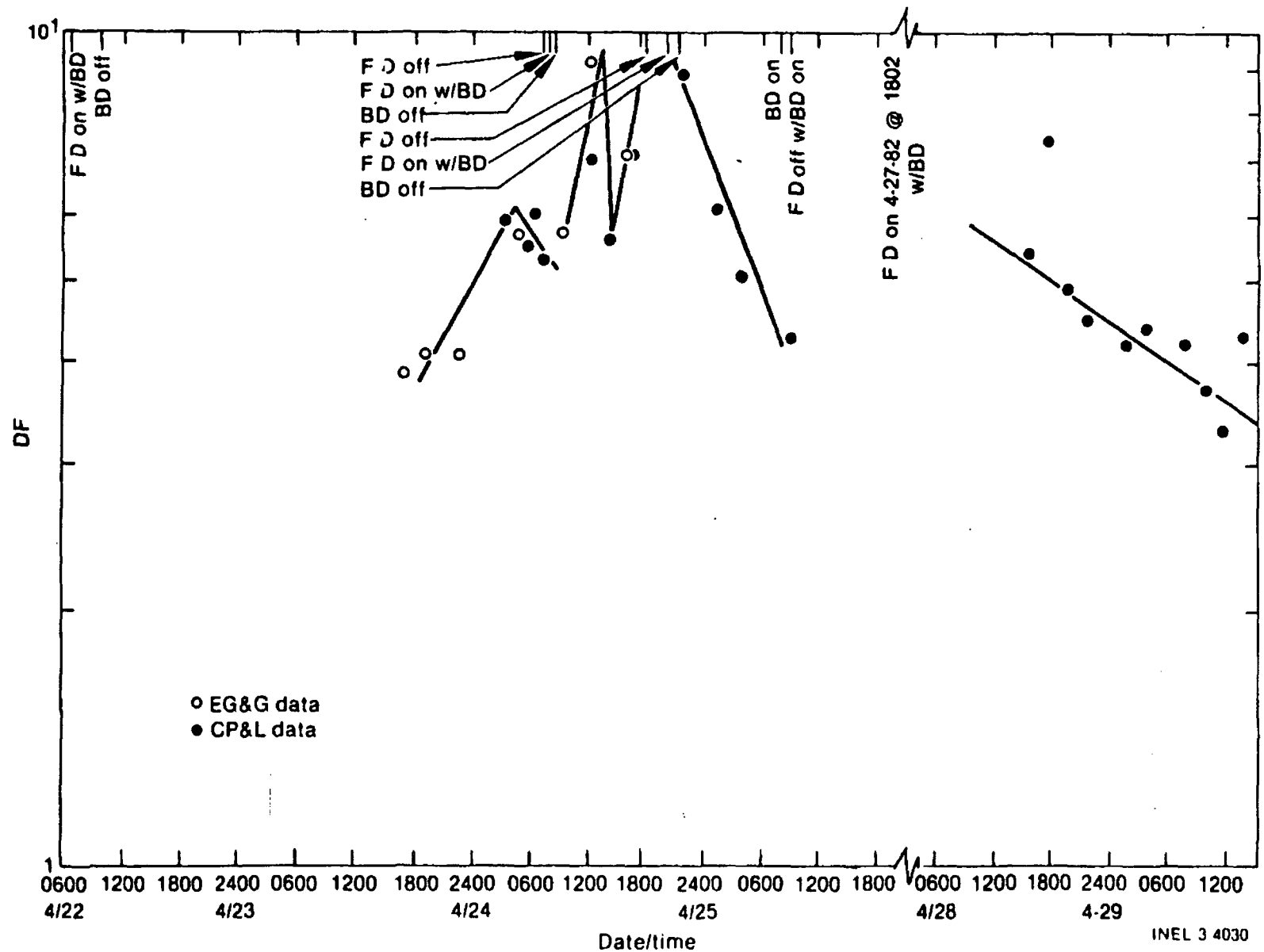


Figure 3-13. ^{137}Cs DF for Unit No. 2 RWCS

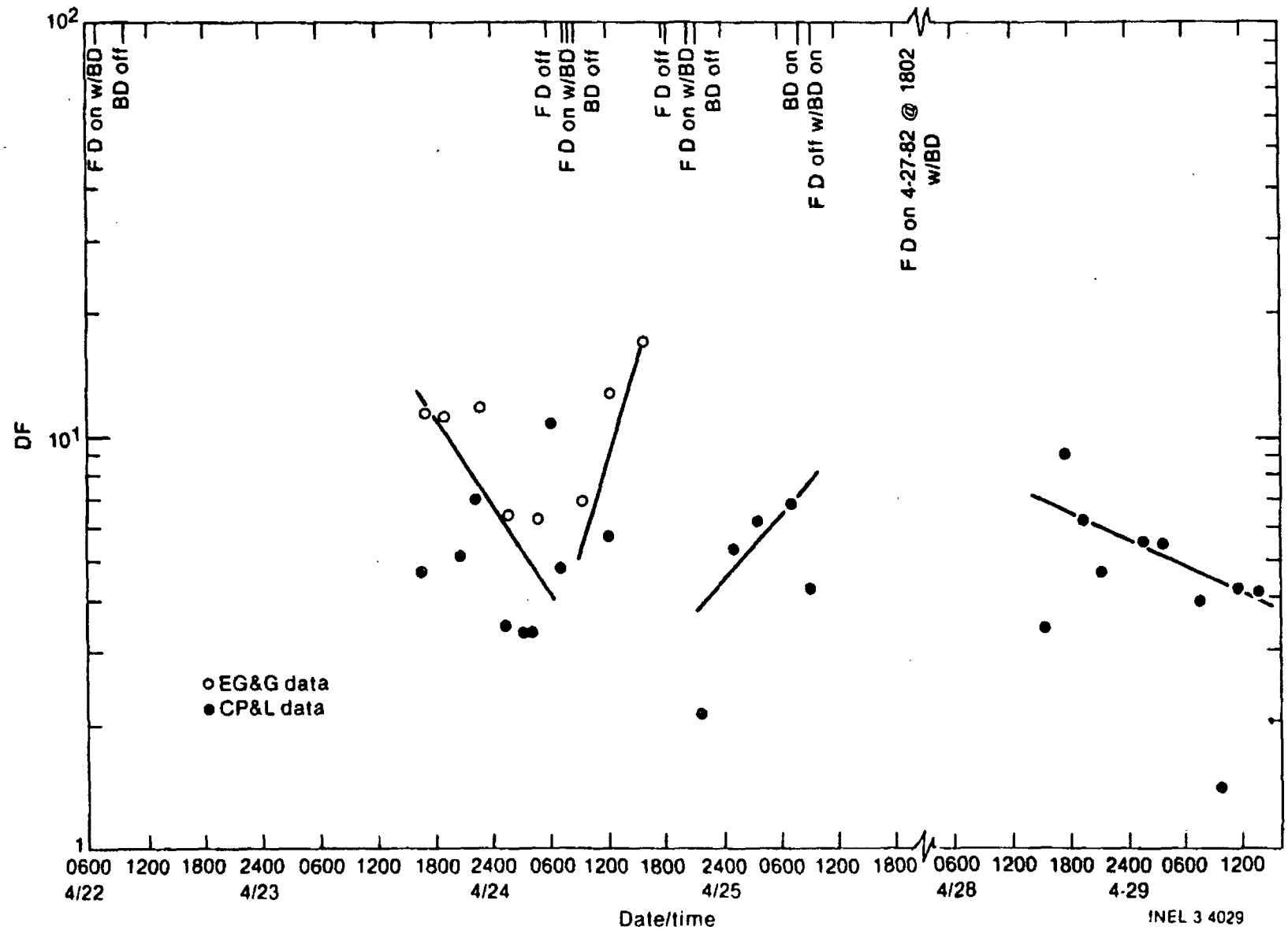


Figure 3-14. ^{54}Mn DF for Unit No. 2 RWCS

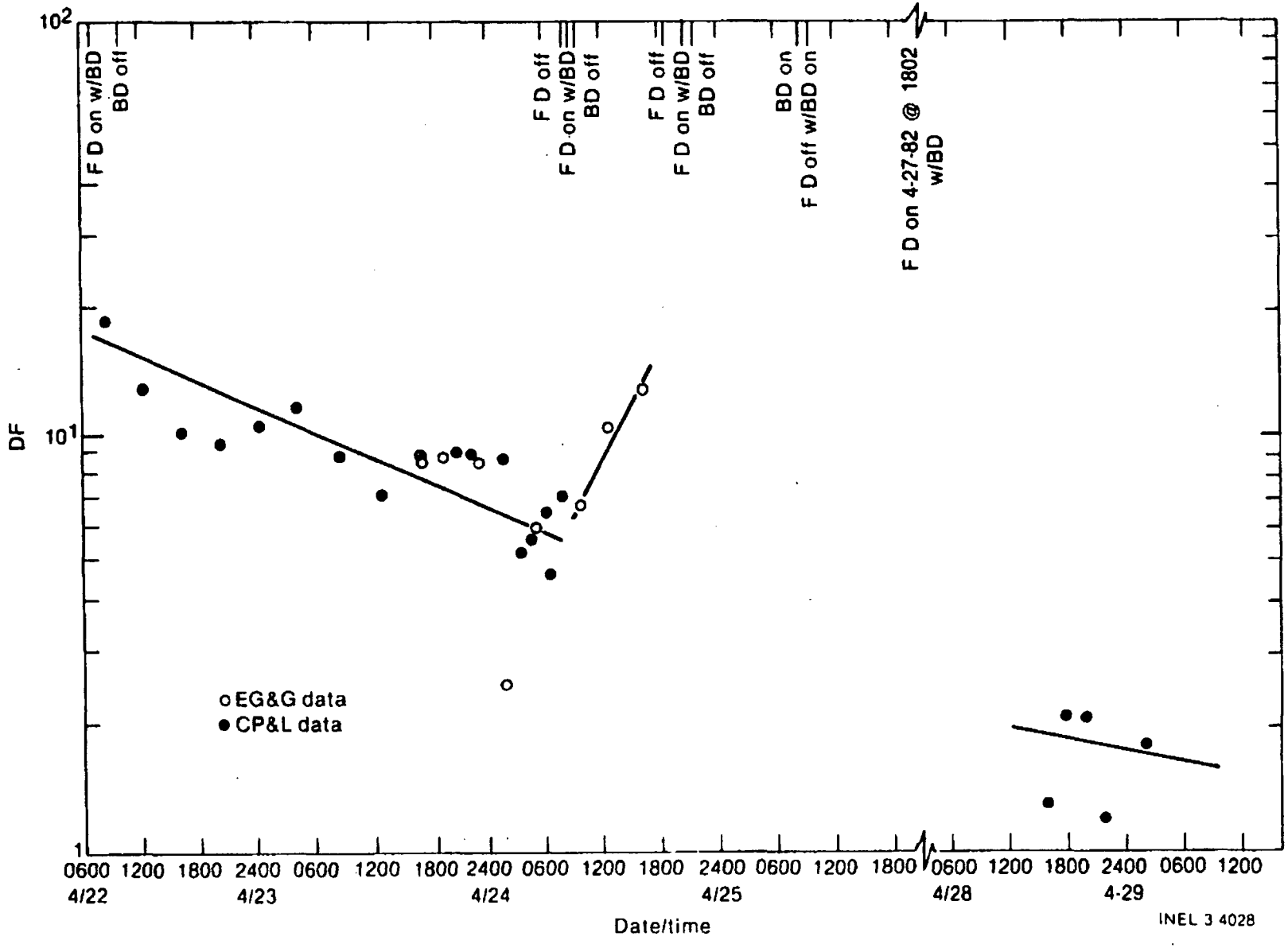


Figure 3-15. ^{51}Cr DF for Unit No. 2 RWCS

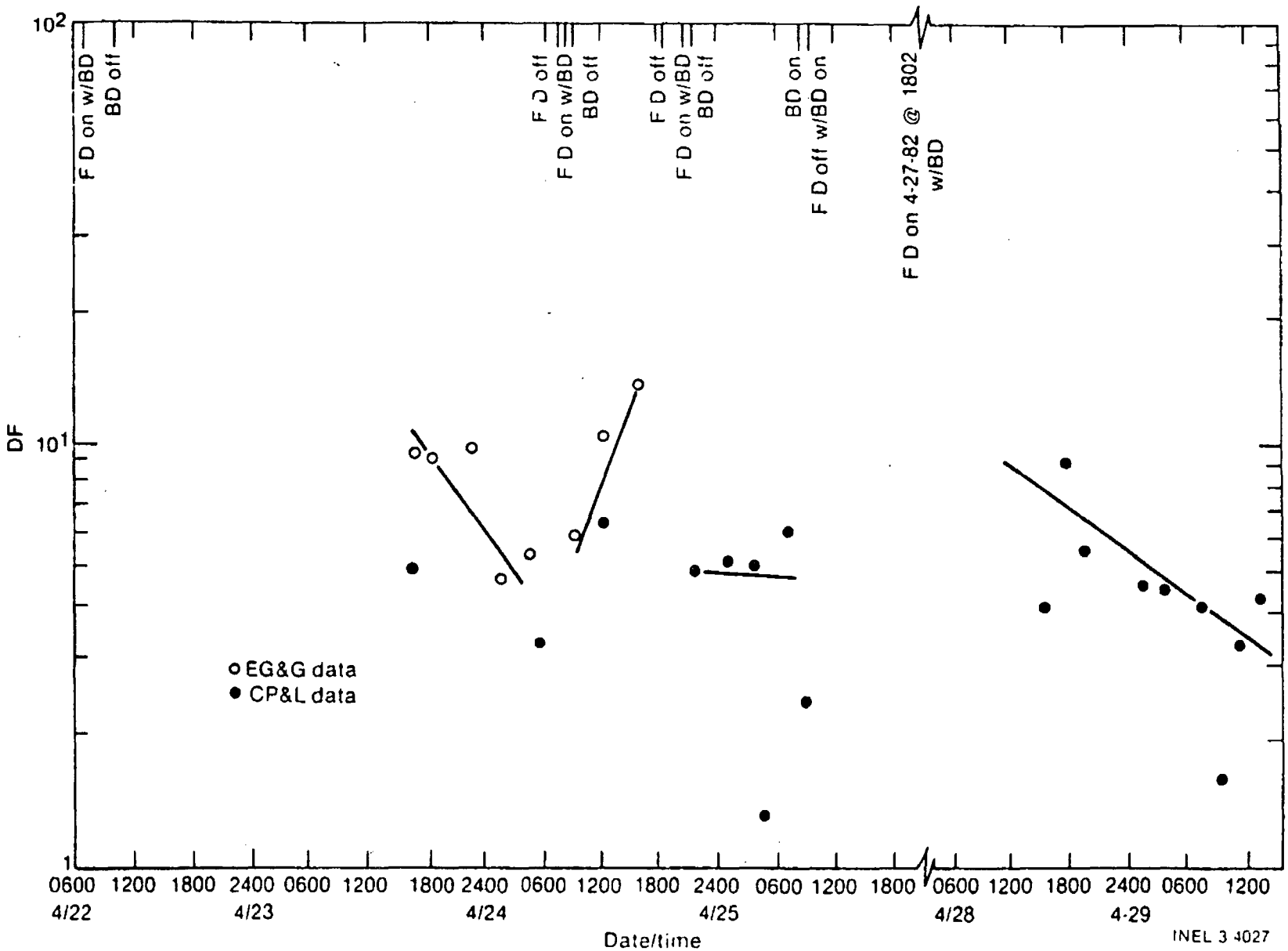


Figure 3-16. ^{60}Co DF for Unit No. 2 RWCS

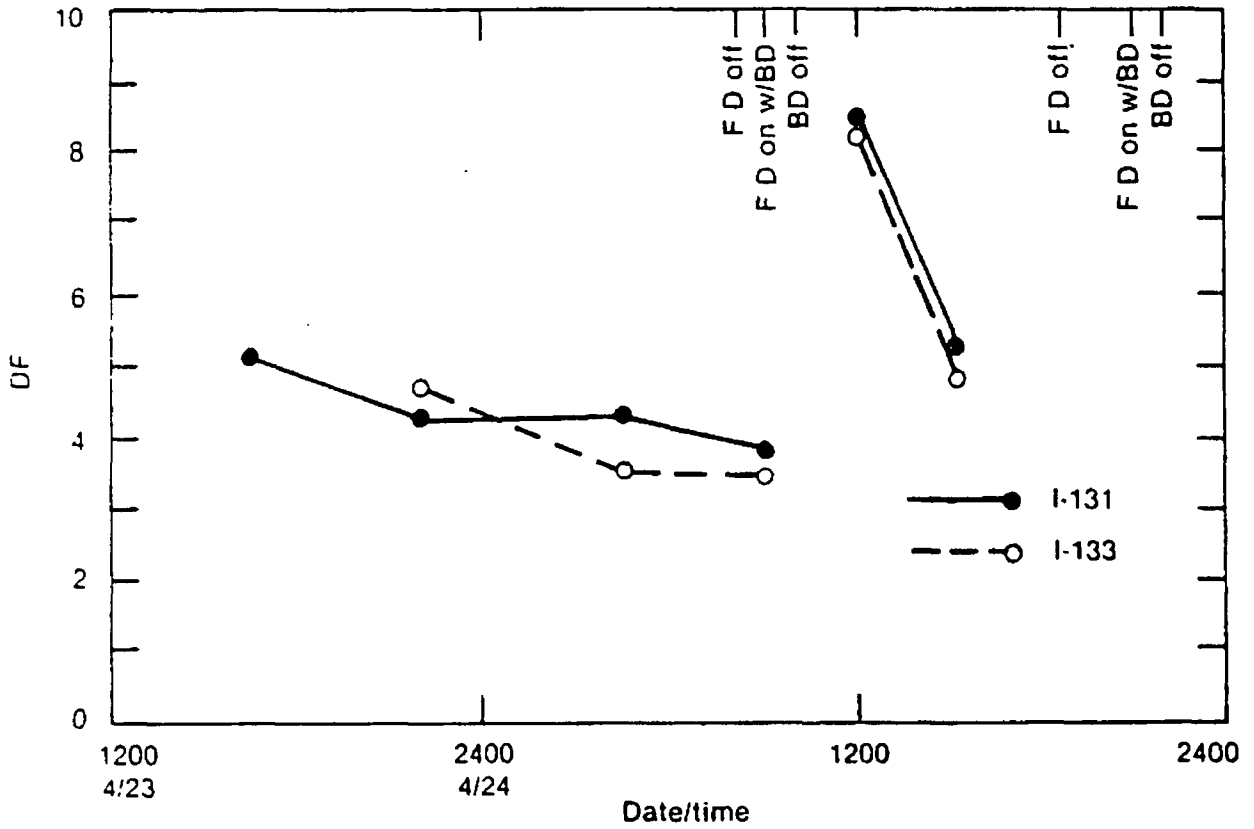


Figure 3-17. DF for Unit No. 2 RWCS - Soluble ^{131}I and ^{133}I

5 6537

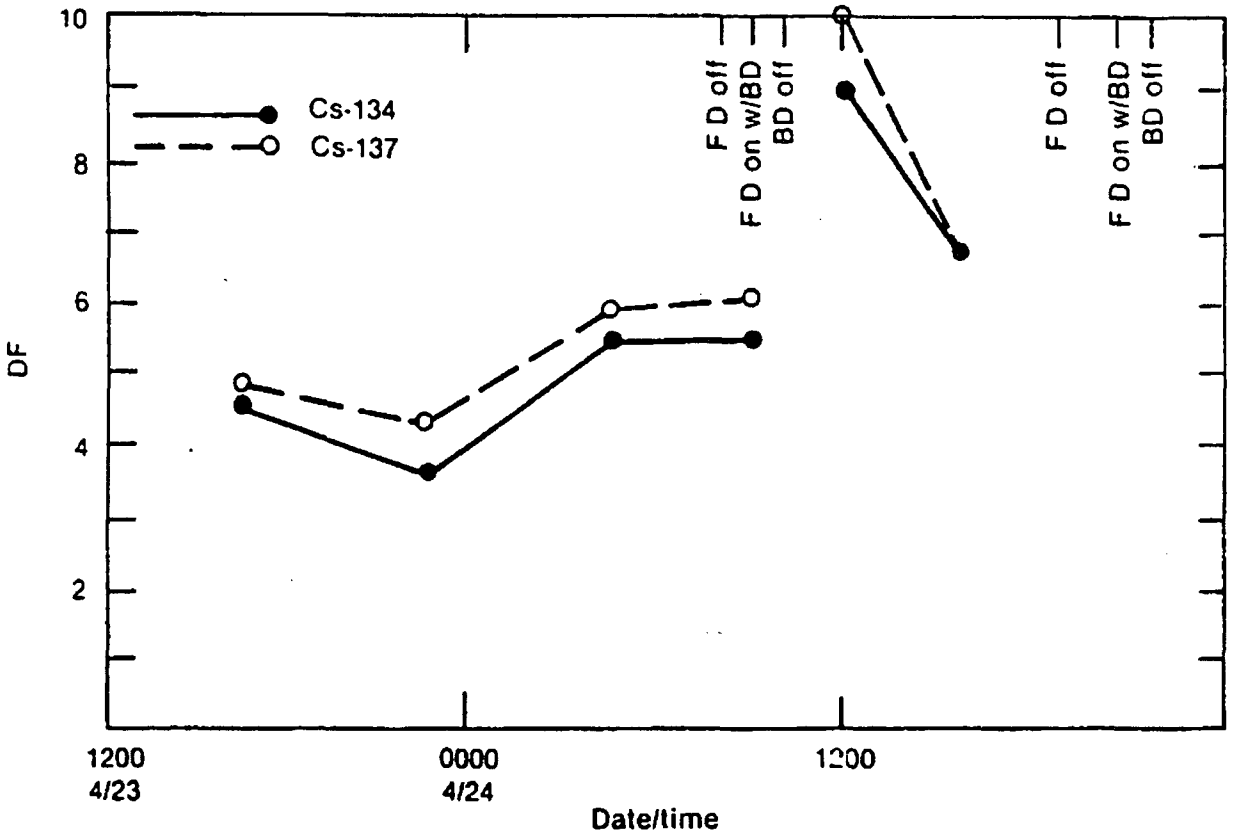


Figure 3-18. DF for Unit No. 2 RWCS - Soluble ^{134}Cs and ^{137}Cs 5 6535

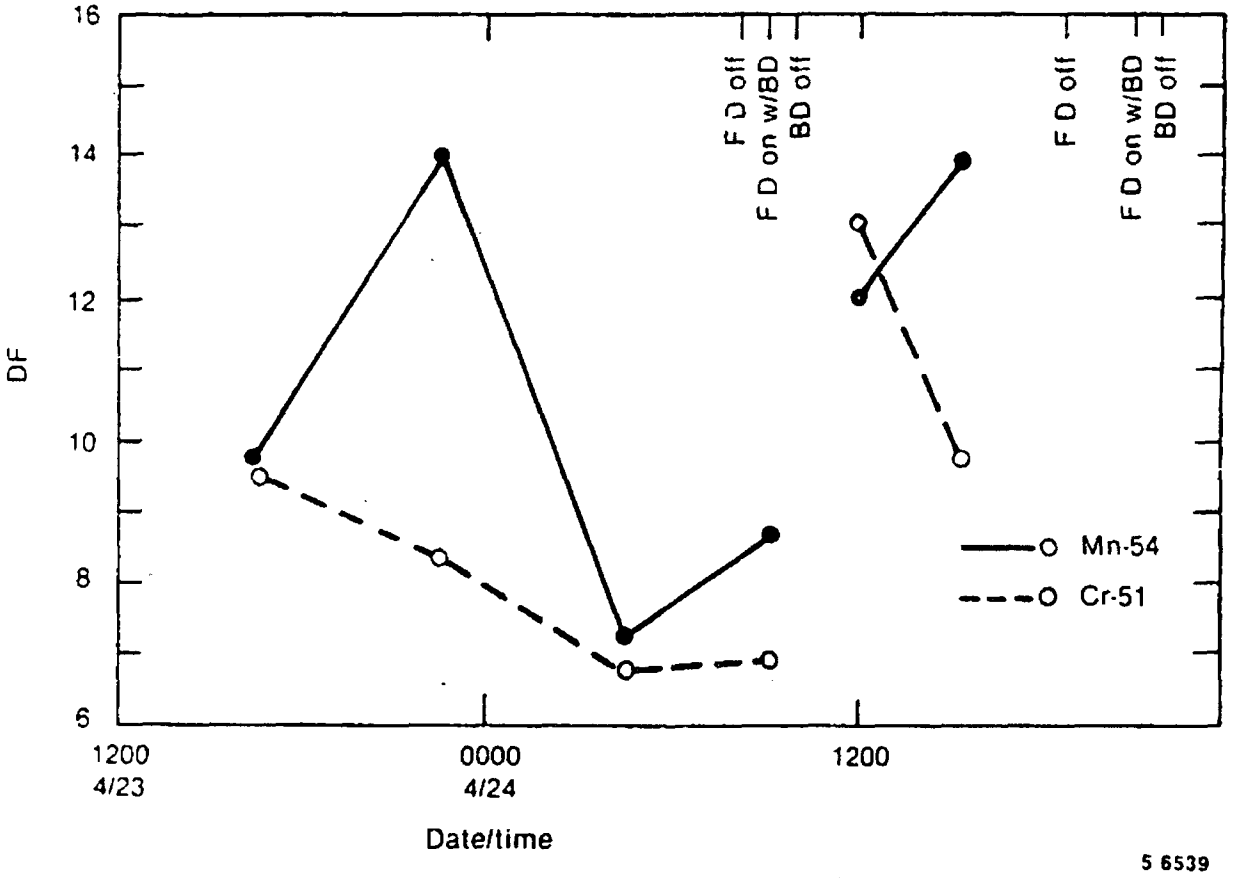


Figure 3-19. DF for Unit No. 2 RWCS - Soluble ^{51}Cr and ^{54}Mn

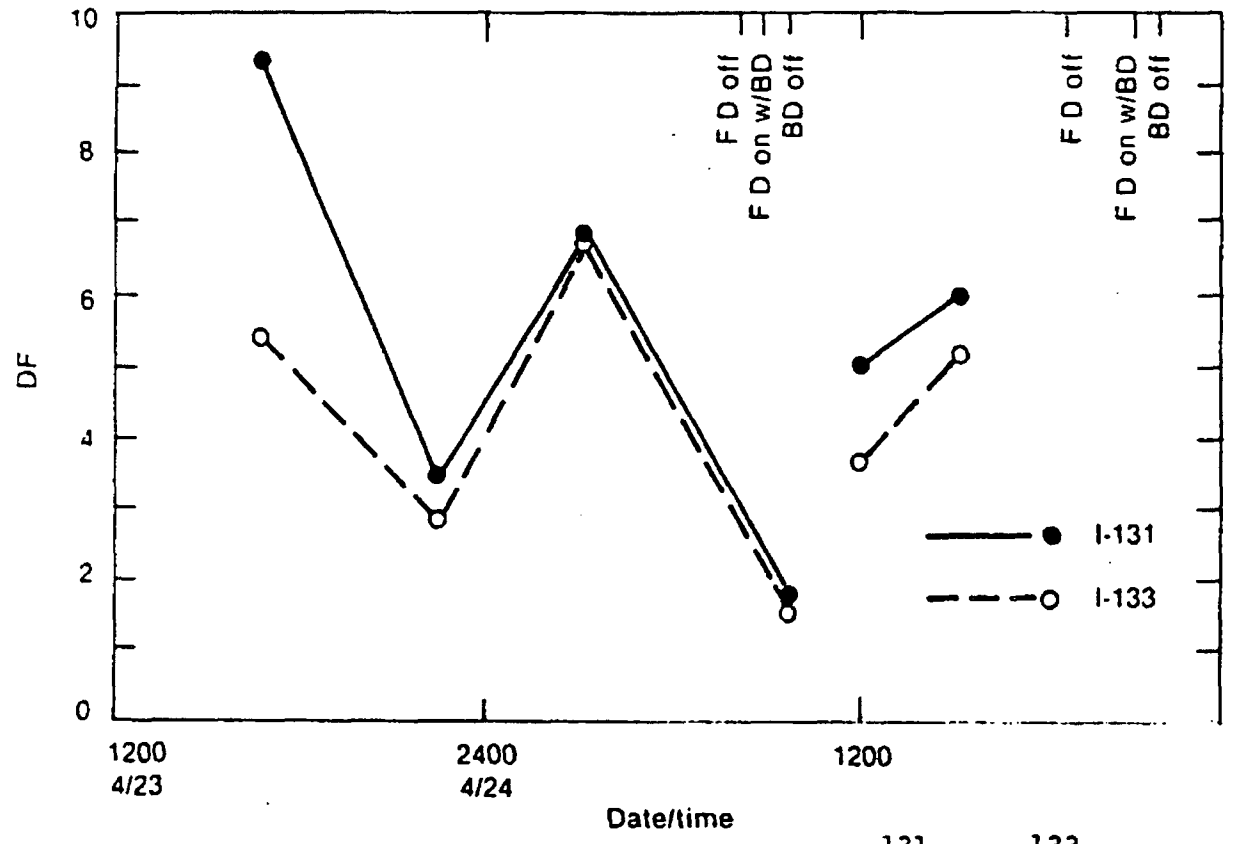


Figure 3-20. DF for Unit No. 2 RWCS - Particulate ^{131}I and ^{133}I 5 6538

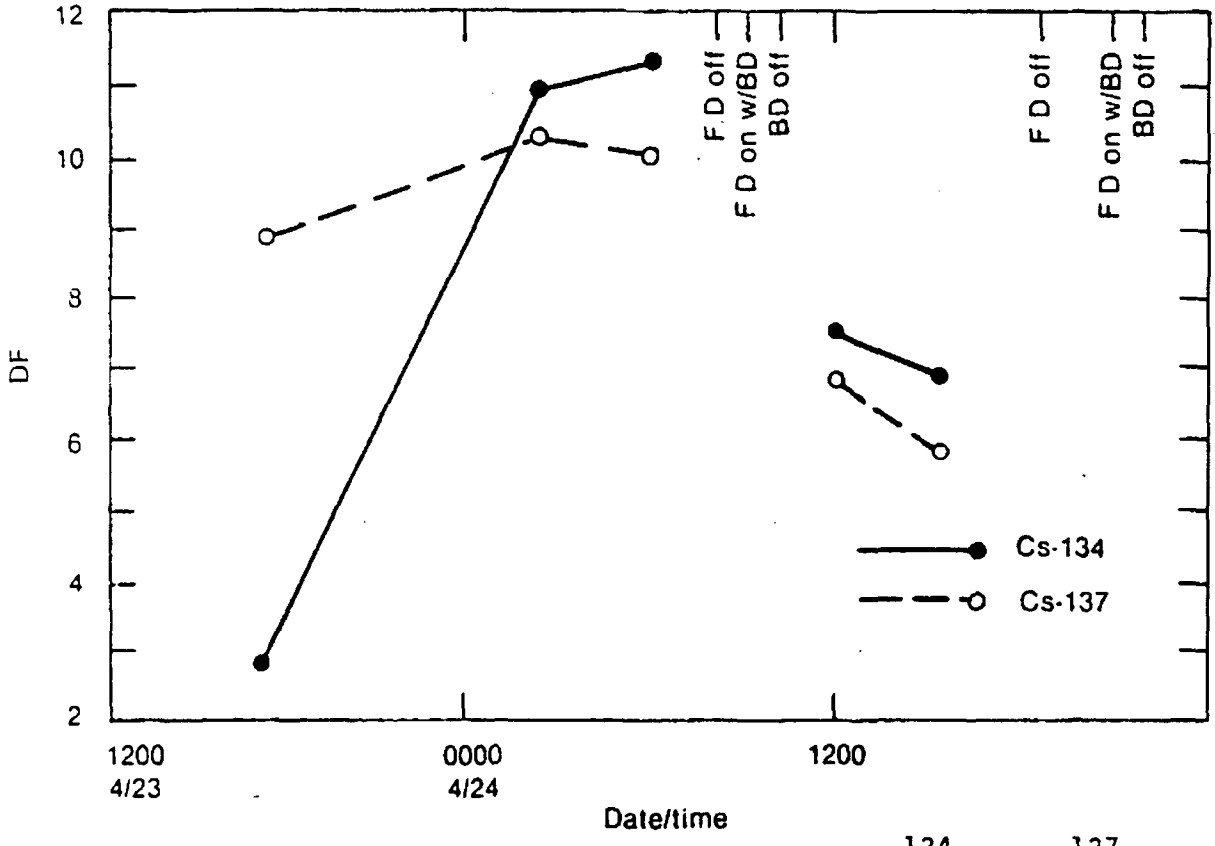


Figure 3-21. DF for Unit No. 2 RWCS - Particulate ^{134}Cs and ^{137}Cs

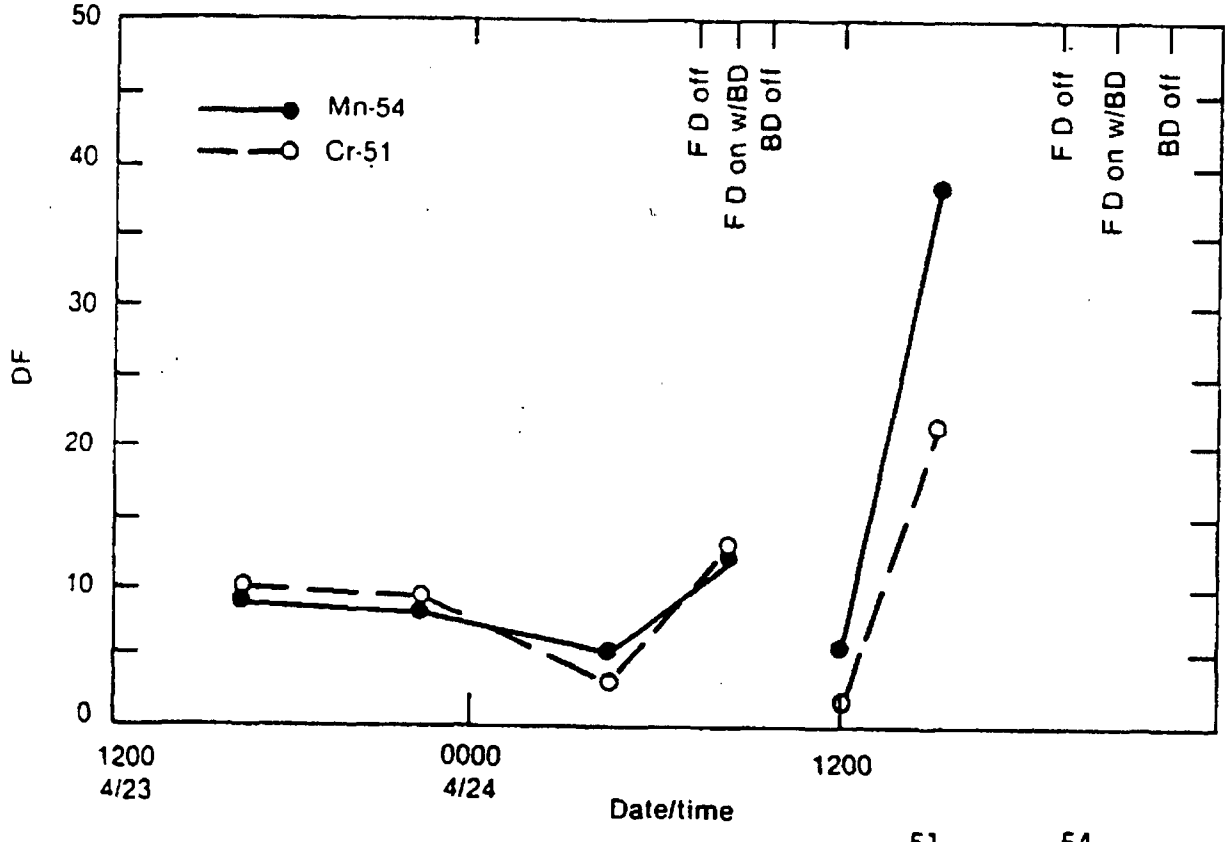


Figure 3-22. DF for Unit No. 2 RWCS - Particulate ^{51}Cr and ^{54}Mn 5 6534

Conductivity DF, defined as the inlet conductivity divided by the outlet conductivity, showed an increase after each precoating and the recirculation of the FD as shown in Figure 3-11. Note that the DF at 1152 on 4-24, after the FD was recirculated, is comparable to that obtained with a new precoated FD. An explanation for this phenomenon is that as the DF was decreasing, the FD particulate resin was breaking through the support screen. When the FD was isolated and recirculated, the particulate resin that was going to the vessel was routed to the front of the FD where it was redeposited. Data in Appendix Tables B.3-16 and B.3-105 (percentage filterable in the inlet and outlet), support the argument that as the DF decreased the particulate resin broke through the support screen. Note the gradual increase in filterable material in the outlet with no comparable increase in the inlet.

Radionuclide DFs followed a pattern similar to the conductivity DF except for the period, from 0936 to 1830 on 4-24, when all of the radionuclide DFs increased. During this period, all the radionuclides shown in Figures 3-12 through 3-16 were increasing in concentration, primarily in the soluble component as discussed in Section 3.4. Thus, the demineralization action increased with concentration, which agrees with observations of pressurized water reactor demineralizer behavior[19] in that the DF increases with inlet concentration. The less frequently observed radionuclide DFs followed the same general trend as the longer half-life radionuclides except that the ranges of DFs were larger.

Total observed DF is controlled by the combination of the filterable and soluble DFs. This is graphically seen in Figures 3-17 through 3-22 which show large DF changes with time in the filterable fraction and smaller changes in the soluble fraction. However, the filterable fraction, being a small percentage of the total activity, has little effect on the total DF.

Differences in the data for ^{54}Mn and ^{56}Mn on April 24, 1982 at 0430 and 0850 and ^{139}Ba and ^{140}Ba on April 23, 1982 at 1614 and 1843 are not clearly understood but may be a function of reactor power or the behavior of the parent compound. Both of these combinations have different parent material, ^{56}Mn is produced from ^{55}Mn while ^{54}Mn may be produced from Fe or Cr. The ^{139}Ba is produced both from fission and ^{138}Ba while ^{140}Ba is mainly produced by fission.

3.3 Predicted Radionuclide Concentrations in Reactor Coolant and Main Steam

The American Nuclear Society, Standards Committee Working Group ANS-18.1, has prepared a set of typical radionuclide concentrations for use in estimating the radioactivity in the principal fluid streams of a light water reactor over its lifetime.[10] Expected radionuclide concentrations in the reactor coolant and main steam for Brunswick Units No. 1 and No. 2 can be derived from the ANSI N237-1976 values by adjusting the parameters of the reference BWR to those of the two Brunswick units. Tables 3.12 and 3.13 list the parameters used to adjust the reference BWR at 100% thermal power to the Brunswick units

at 60% and 80% thermal power for Units No. 1 and No. 2, respectively. The Brunswick data were taken from design specifications and operating parameters.

In Tables 3.14 through 3.17 the predicted radionuclide concentrations in reactor coolant and main steam are compared with the measured concentrations for steady state operations at 60 and 80 percent thermal power for Units No. 1 and No. 2. All radionuclides treated in N237-1976 were not included in Tables 3.14 through 3.17. Only those radionuclides that could be measured at Brunswick were included. Reasons for omission of radionuclides include (a) the noble gases could not be quantatively sampled, (b) several radionuclides are pure beta emitters, (c) the gamma energy of the emitted photons are masked in the spectra such that a quantitative value could not be obtained and (d) the radionuclide's half-life was too short. In general, all measured radionuclide concentrations with the exception of ^{24}Na, ^{51}Cr, ^{54}Mn and ^{110m}Ag in the Unit No. 1 reactor coolant (Table 3.14) are lower than the predicted concentrations. The radioiodines have the largest overprediction by factors of 60 to 1000, and the cruds have the lowest overprediction by factors of 3 to 50. Those that were underpredicted range from a factor of 1.25 to 10 too low. In the main steam, (Table 3.15), the radioiodines are overpredicted by factors of 12 to 300 while generally the rest of the measured radionuclides are also overpredicted except by smaller factors with the exception of ^{138}Cs and ^{54}Mn.

In the reactor coolant of Unit No. 2, (Table 3.16), the predicted and measured values agree in most cases within a factor of 5 with a few exceptions. In general, those values underpredicted were for radionuclides with short half-lives. These short half-life radionuclides may be an indication of more tramp fuel than assumed in N237. As the main steam probe samples were known to not be representative of the main steam, values were calculated using the methodology of Section 3.6.1 and the analysis results for the CFD inlet, reactor coolant and HDDT outlet. The calculation was performed only when one or none of the input concentrations were not less-thans. The measured values listed in Table 3.17 agree with the N237 calculated values withina factor of 3 with a few exceptions. In both units, the higher ^{24}Na concentration is probably the result of sea water intrusion in the condenser/hotwell as pointed out in Sections 3.2.1.1 and 3.2.1.2.

3.4 Radionuclide Spiking Studies

Brunswick Unit No. 2 was shut down on April 24, 1982 for refueling. Spiking studies were conducted during this shutdown to determine what the spike characteristics were for the different radionuclides. Both CP&L and EG&G Idaho personnel sampled the reactor coolant during the time period April 22 to April 25. Reactor power reduction was initiated at 2103 hours on April 23 and by 0113 hours on April 24 zero power was reached. At 1122 hours of the same day (April 24) the power level was increased but was reduced back to zero at 1139 hours on April 25. The reactor coolant was sampled approximately every four hours until 2030 hours on April 23 when hourly sampling was begun. At 0900 hours the sampling schedule was

TABLE 3.12

PARAMETERS USED TO ADJUST N237 REFERENCE BWR PREDICTED REACTOR COOLANT AND MAIN STEAM CONCENTRATIONS TO BRUNSWICK UNIT NO. 1 AT 60% RATED THERMAL POWER

PARAMETER	SYMBOL	UNITS	BRUNSWICK UNIT NO. 1
Thermal power	P	Mwt	1462*
Weight of water in the reactor vessel	WP	lb	5.6(5)
Cleanup demineralizer flow rate	FA	lb/hr	4.3(4)
Steam flow rate	FS	lb/hr	6.0(6)**
Ratio of condensate demineralizer flow rate to steam flow rate	NC	---	0.65

TABLE 3.13

PARAMETERS USED TO ADJUST N237 REFERENCE BWR PREDICTED REACTOR COOLANT AND MAIN STEAM CONCENTRATIONS TO BRUNSWICK UNIT NO. 2 AT 80% RATED THERMAL POWER

PARAMETER	SYMBOL	UNITS	BRUNSWICK UNIT NO. 2
Thermal power	P	Mwt	1949*
Weight of water in the reactor vessel	WP	lb	5.6(5)
Cleanup demineralizer flow rate	FA	lb/hr	4.3(4)
Steam flow rate	FS	lb/hr	8.0(6)**
Ratio of condensate demineralizer flow rate to steam flow rate	NC	---	0.65

* FSAR 100% Rated Thermal Power 2436

** At 100% Rated Thermal Power 1.04(7)

TABLE 3.14

UNIT NO. 1 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT AT 60 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{84}Br	2(-3)	<7(-4)
^{131}I	7(-3)	7(-6)
^{132}I	2(-2)	3(-4)
^{133}I	3(-2)	9(-5)
^{134}I	3(-2)	5(-4)
^{135}I	2(-2)	2(-4)
^{89}Rb	1(-3)	<5(-3)
^{134}Cs	4(-5)	<2(-6)
^{136}Cs	3(-5)	<3(-6)
^{137}Cs	9(-5)	<3(-6)
^{138}Cs	3(-3)	<3(-4)
^{24}Na	8(-3)	3(-2)
^{51}Cr	6(-3)	1(-2)
^{54}Mn	8(-5)	1(-4)
^{56}Mn	3(-2)	9(-4)
^{59}Fe	4(-5)	<3(-6)
^{58}Co	3(-4)	1(-4)
^{60}Co	5(-4)	1(-4)
^{65}Zn	3(-4)	6(-6)
^{91}Sr	3(-3)	<8(-5)
^{93}Y	3(-3)	<2(-4)
^{95}Zr	9(-6)	<3(-6)
^{95}Nb	8(-6)	<2(-6)
^{99}Mo	2(-3)	1(-4)
^{103}Ru	3(-5)	<2(-6)

TABLE 3.14 (CONT)

UNIT NO. 1 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT AT 60 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{106}RuD	4(-6)	<2(-5)
^{110m}Ag	1(-6)	1(-5)
^{129m}Te	5(-5)	<2(-5)
^{131m}Te	1(-4)	<3(-5)
^{132}Te	1(-5)	<2(-6)
^{139}Ba	4(-3)	7(-5)
^{140}Ba	5(-4)	<6(-6)
^{141}Ce	4(-5)	2(-6)
^{143}Ce	3(-5)	<7(-6)
^{144}Ce	4(-6)	<6(-6)
^{187}W	3(-4)	<3(-5)
^{239}Np	8(-3)	<2(-5)
^{92}Sr	5(-3)	7(-6)
^{99}Tc	1(-2)	3(-2)
^{101}Tc	3(-2)	8(-4)
^{104}Tc	3(-2)	6(-4)
^{141}Ba	3(-3)	<5(-4)

TABLE 3.15

UNIT NO. 1 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM AT 60 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{84}Br	4(-5)	<8(-5)
^{131}I	1(-4)	3(-7)
^{132}I	4(-4)	1(-5)
^{133}I	6(-4)	5(-6)
^{134}I	5(-4)	3(-5)
^{135}I	4(-4)	1(-5)
^{89}Rb	1(-6)	*
^{134}Cs	4(-8)	<8(-8)
^{136}Cs	3(-8)	<1(-7)
^{137}Cs	9(-8)	<2(-7)
^{138}Cs	3(-6)	7(-5)
^{24}Na	8(-6)	5(-7)
^{51}Cr	6(-6)	<9(-7)
^{54}Mn	8(-8)	3(-7)
^{56}Mn	3(-5)	<1(-6)
^{59}Fe	4(-8)	<2(-7)
^{58}Co	3(-7)	<8(-8)
^{60}Co	5(-7)	4(-7)
^{65}Zn	3(-7)	<2(-7)
^{91}Sr	3(-6)	1(-6)
^{93}Y	3(-6)	<9(-6)
^{95}Zr	9(-9)	<2(-7)
^{95}Nb	8(-9)	<2(-7)
^{99}Mo	2(-6)	<8(-7)
^{103}Ru	3(-8)	<2(-7)
^{106}RuD	4(-9)	<2(-6)

TABLE 3.15 (CONT)

UNIT NO. 1 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM AT 60 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{110m}Ag	1(-9)	<9(-8)
^{129m}Te	5(-8)	<9(-7)
^{131m}Te	1(-7)	<6(-7)
^{132}Te	1(-8)	<2(-7)
^{139}Ba	4(-6)	<2(-5)
^{140}Ba	5(-7)	<3(-7)
^{141}Ce	4(-8)	<2(-7)
^{143}Ce	3(-8)	<4(-7)
^{144}Ce	4(-9)	<7(-7)
^{187}W	3(-7)	<1(-6)
^{239}Np	8(-6)	<7(-7)

* Radionuclide not measured.

TABLE 3.16

UNIT NO. 2 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT AT 80 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{84}Br	3(-3)	2(-2)
^{131}I	8(-3)	2(-3)
^{132}I	3(-2)	5(-2)
^{133}I	3(-2)	3(-2)
^{134}I	3(-2)	2(-1)
^{135}I	2(-2)	6(-2)
^{89}Rb	2(-3)	<5(-2)
^{134}Cs	5(-5)	4(-5)
^{136}Cs	3(-5)	8(-5)
^{137}Cs	1(-4)	5(-5)
^{138}Cs	4(-3)	3(-2)
^{24}Na	1(-2)	2(-2)
^{51}Cr	8(-3)	3(-2)
^{54}Mn	1(-4)	6(-5)
^{56}Mn	3(-2)	<7(-4)
^{59}Fe	5(-5)	2(-5)
^{58}Co	3(-4)	8(-5)
^{60}Co	7(-4)	2(-4)
^{65}Zn	3(-4)	6(-5)
^{91}Sr	4(-3)	7(-3)
^{93}Y	4(-3)	1(-3)
^{95}Zr	1(-5)	<6(-6)
^{95}Nb	1(-5)	<5(-6)
^{99}Mo	3(-3)	6(-3)
^{103}Ru	3(-5)	<6(-6)

TABLE 3.16 (CONT)

UNIT NO. 2 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT AT 80 PERCENT POWER (microcuries/gram)

Nuclide	Predicted	Measured
^{106}RuD	5(-6)	<7(-5)
^{110m}Ag	2(-6)	5(-6)
^{129m}Te	7(-5)	<4(-5)
^{131m}Te	1(-4)	<9(-5)
^{132}Te	2(-5)	<5(-5)
^{139}Ba	6(-3)	2(-2)
^{140}Ba	7(-4)	2(-4)
^{141}Ce	5(-5)	2(-5)
^{143}Ce	4(-5)	<5(-5)
^{144}Ce	5(-6)	<3(-5)
^{187}W	4(-4)	<2(-4)
^{239}Np	1(-2)	5(-3)
^{92}Sr	7(-3)	2(-2)
^{92}Y	5(-3)	<5(-3)
^{99}Tc	2(-2)	9(-2)
^{101}Tc	4(-2)	2(-1)
^{104}Tc	3(-2)	2(-1)
^{141}Ba	4(-3)	6(-2)
^{142}Ba	2(-3)	1(-1)
^{142}La	3(-3)	3(-3)

TABLE 3.17

UNIT NO. 2 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM AT 80 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{84}Br	6(-5)	*
^{131}I	2(-4)	3(-5)[a]
^{132}I	6(-4)	6(-4)[a]
^{133}I	6(-4)	4(-4)[a]
^{134}I	7(-4)	1(-3)[a]
^{135}I	5(-4)	8(-4)[a]
^{89}Rb	2(-6)	*
^{134}Cs	5(-8)	2(-7)[a]
^{136}Cs	3(-8)	<8(-7)
^{137}Cs	1(-7)	3(-7)[a]
^{138}Cs	4(-6)	*
^{24}Na	1(-5)	2(-5)[a]
^{51}Cr	8(-6)	<8(-6)
^{54}Mn	1(-7)	1(-7)[a]
^{56}Mn	3(-5)	<8(-5)
^{59}Fe	5(-8)	2(-6)
^{58}Co	3(-7)	3(-7)[a]
^{60}Co	7(-7)	3(-7)[a]
^{65}Zn	3(-7)	3(-7)[a]
^{91}Sr	4(-6)	2(-4)[a]
^{93}Y	4(-6)	<2(-5)
^{95}Zr	1(-8)	<6(-7)
^{95}Nb	1(-8)	1(-6)
^{99}Mo	3(-6)	<2(-5)
^{103}Ru	3(-8)	<5(-7)

TABLE 3.17 (CONT)

UNIT NO. 2 COMPARISON OF PREDICTED AND MEASURED RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM AT 80 PERCENT POWER
(microcuries/gram)

Nuclide	Predicted	Measured
^{110m}Ag	2(-9)	<2(-6)
^{129m}Te	7(-8)	<2(-5)
^{131m}Te	1(-7)	<8(-6)
^{132}Te	2(-8)	<6(-7)
^{139}Ba	6(-6)	2(-3)[a]
^{140}Ba	7(-7)	2(-5)[a]
^{141}Ce	5(-8)	>4(-7)[a]
^{143}Ce	4(-8)	2(-6)
^{144}Ce	5(-9)	<5(-6)
^{187}W	4(-7)	8(-6)
^{239}Np	1(-5)	6(-6)[a]

* Radionuclide not measured.

a. Calculated values using 3.6.1 methodology.

changed to approximately every three hours until 1532 hours on April 24 at which time sampling was discontinued as EG&G personnel were not informed of the power increase on April 24. Analysis results of these samples are presented in Appendix Tables B.3-11 and B.3-102 for the EG&G Idaho and CP&L samples, respectively. These data have been plotted as well as power level indicated in Figures 3-23 through 3-29 for ^{131}I, ^{137}Cs, selected activation products, ^{141}Ce and ^{239}Np. Table 3.18 lists the radionuclide spiking data for Unit No. 2.

Radioiodines and cesiums reached peak concentrations within two hours after zero power at 0113 hours on April 24. The only exception to this was ^{135}I which did not have a significant increase during this period. The second increase in concentration peaked approximately 7.5 to 8.5 hours after power was increased at 1122 hours on April 24. A third ^{134}I spike was observed, at 0445 on April 25 which cannot be explained.

As seen in Figures 3-23 and 3-24, the radioiodine and cesium spikes correlate with changes in reactor power and are similar in shape. Calculations were made of the Cs to I atom ratio for the purpose of evaluating a possible CsI existance. The calculations resulted in an overabundance of Cs atoms. This result does not prove nor preclude the existance of a CsI complex.

All activation products spiked rapidly after the power reduction at 2103 hours on April 23, reaching peak concentrations at 0124 on April 24. A second spike was observed with ^{60}Co which coincided with the power decrease at 1139 hours on April 25.

As discussed in Section 3.2.2, the radionuclide concentration increases for all nuclides are due to a soluble component and not the particulate fraction during the shutdown spike. The radionuclide components (i.e., soluble and particulate) were not measured by CP&L personnel for the period April 24 at 1400 to April 25 at 1900. Therefore, no evaluation of the radionuclide component behavior could be performed for the second spike.

The spiking behavior of ^{141}Ce follows that of the activation products while ^{239}Np does not follow either the radioiodines or the activation products, with the peak concentration observed eight hours after shutdown.

3.5 Fission Product Release Mode

Measured concentrations of reactor coolant were used to evaluate the fission product release mode, and thus the overall fuel cladding integrity for both Brunswick units. The methods used were those of Skarpelos and Gilbert[11] and Mayer et al.[12] Appendix A Section A.3 presents a discussion of the two techniques and results of the calculations. The data used are

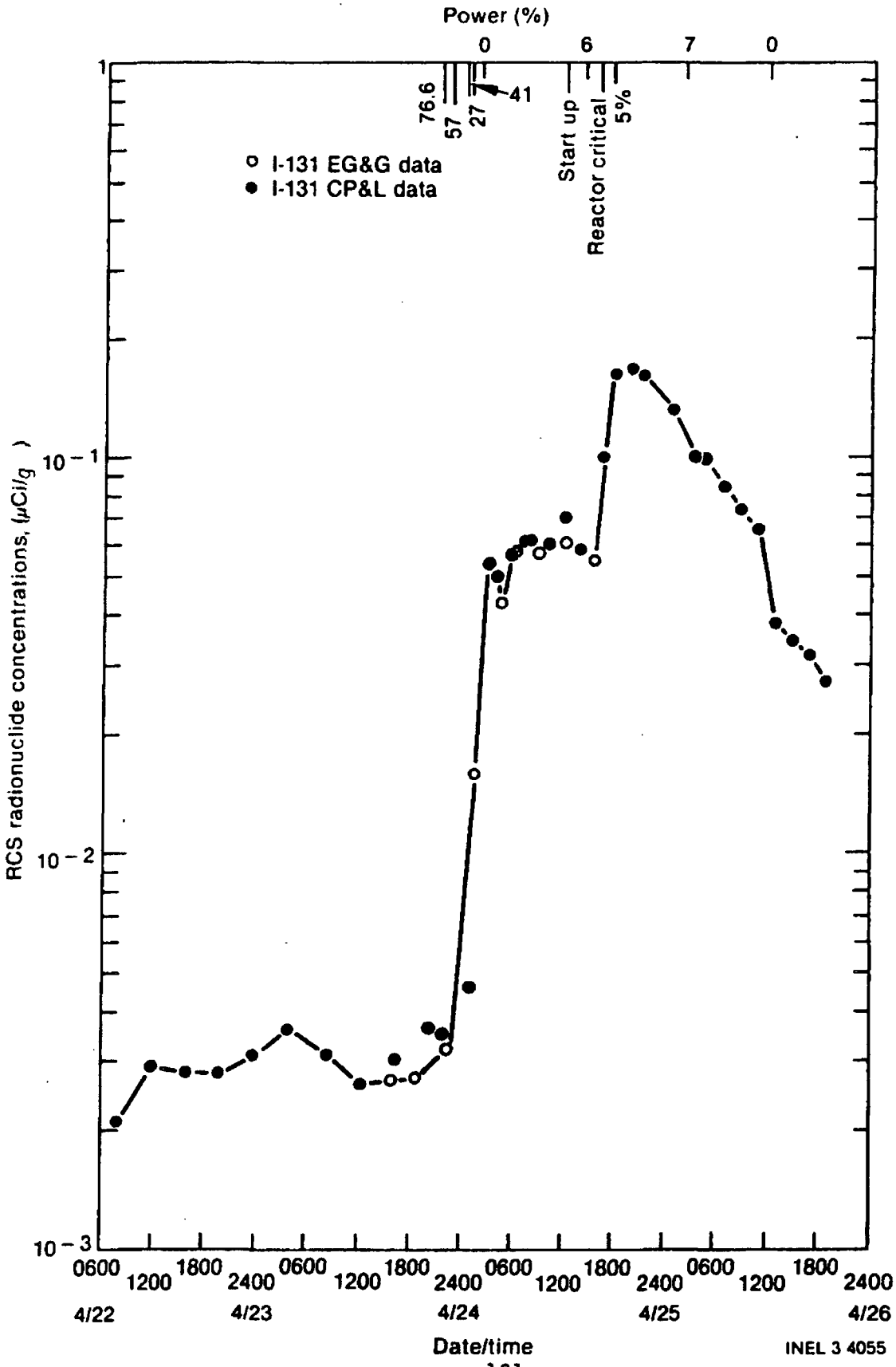


Figure 3-23. Unit No. 2 ^{131}I Shutdown Spike

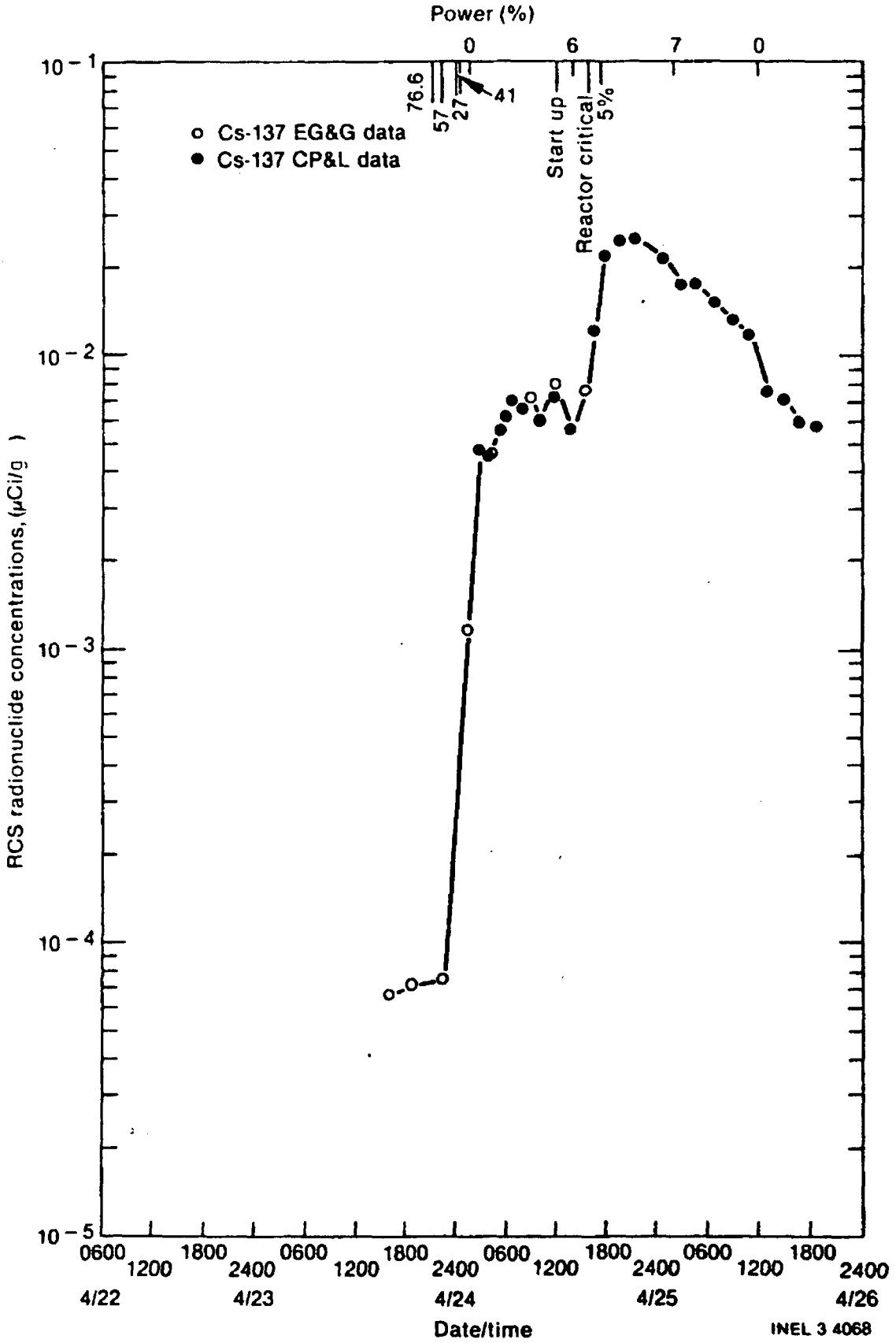


Figure 3-24. Unit No. 2 ^{137}Cs Shutdown Spike

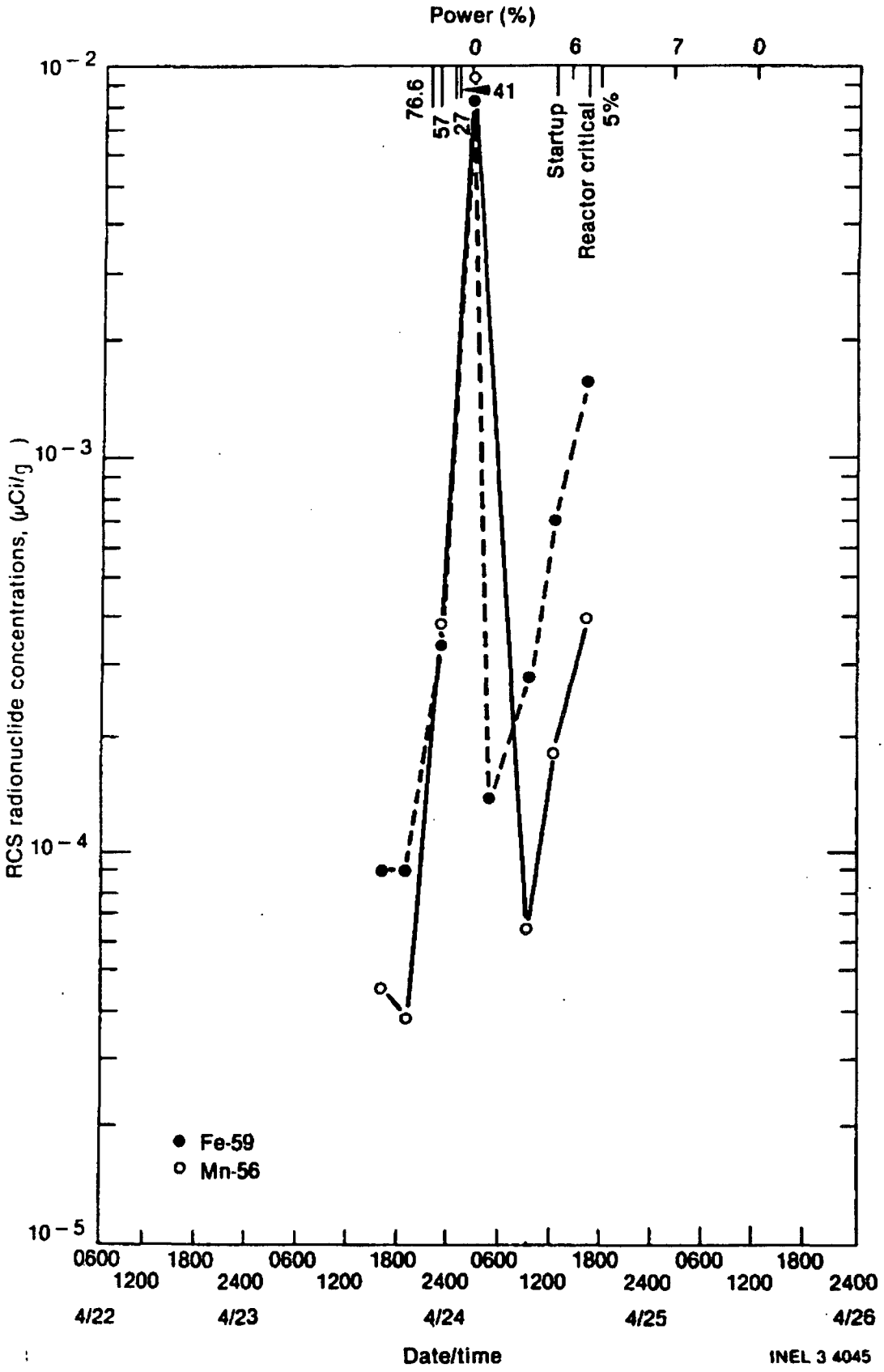


Figure 3-25. Unit No. 2 ^{59}Fe and ^{56}Mn Shutdown Spike

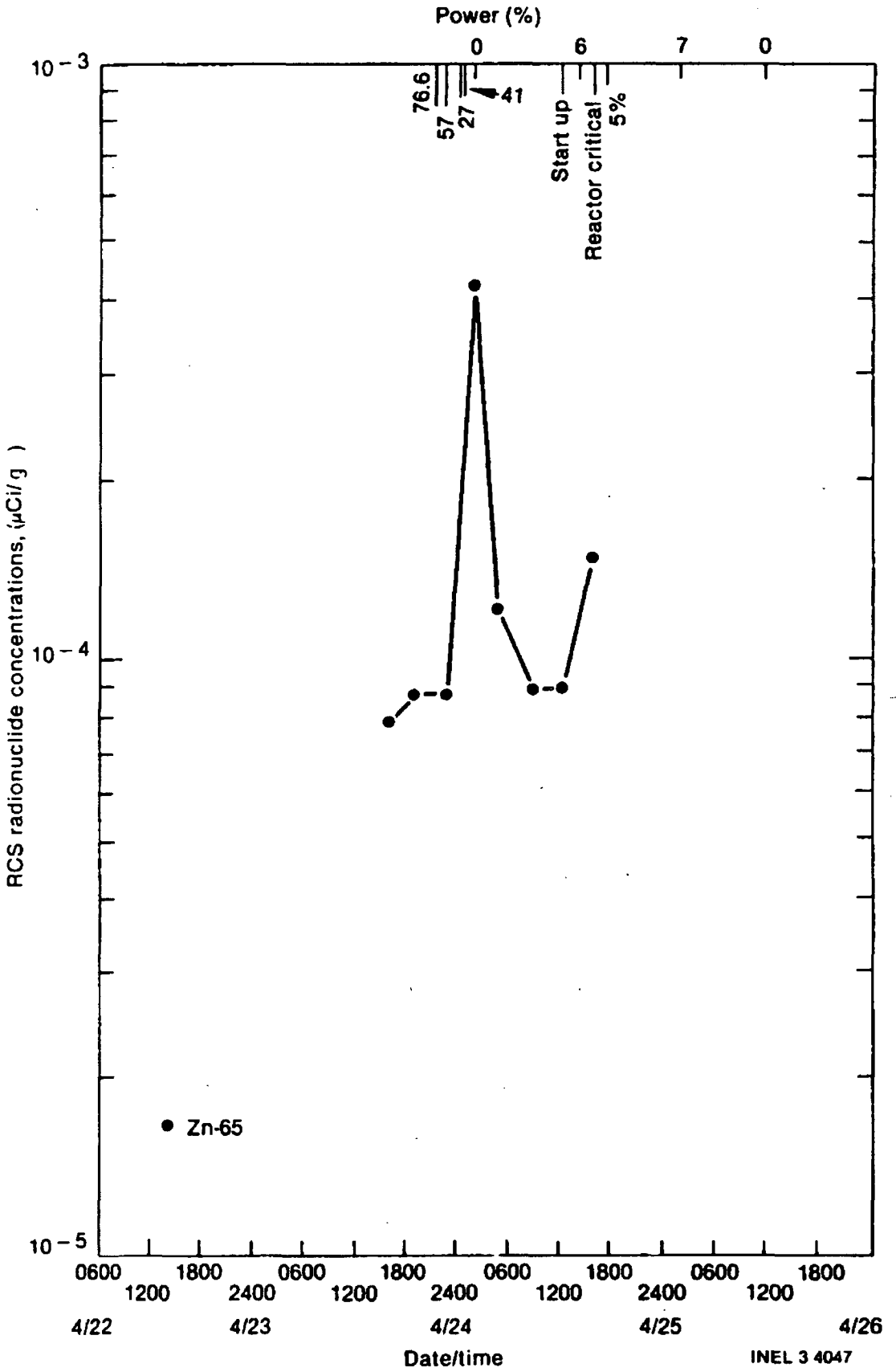


Figure 3-26. Unit No. 2 ^{65}Zn Shutdown Spike

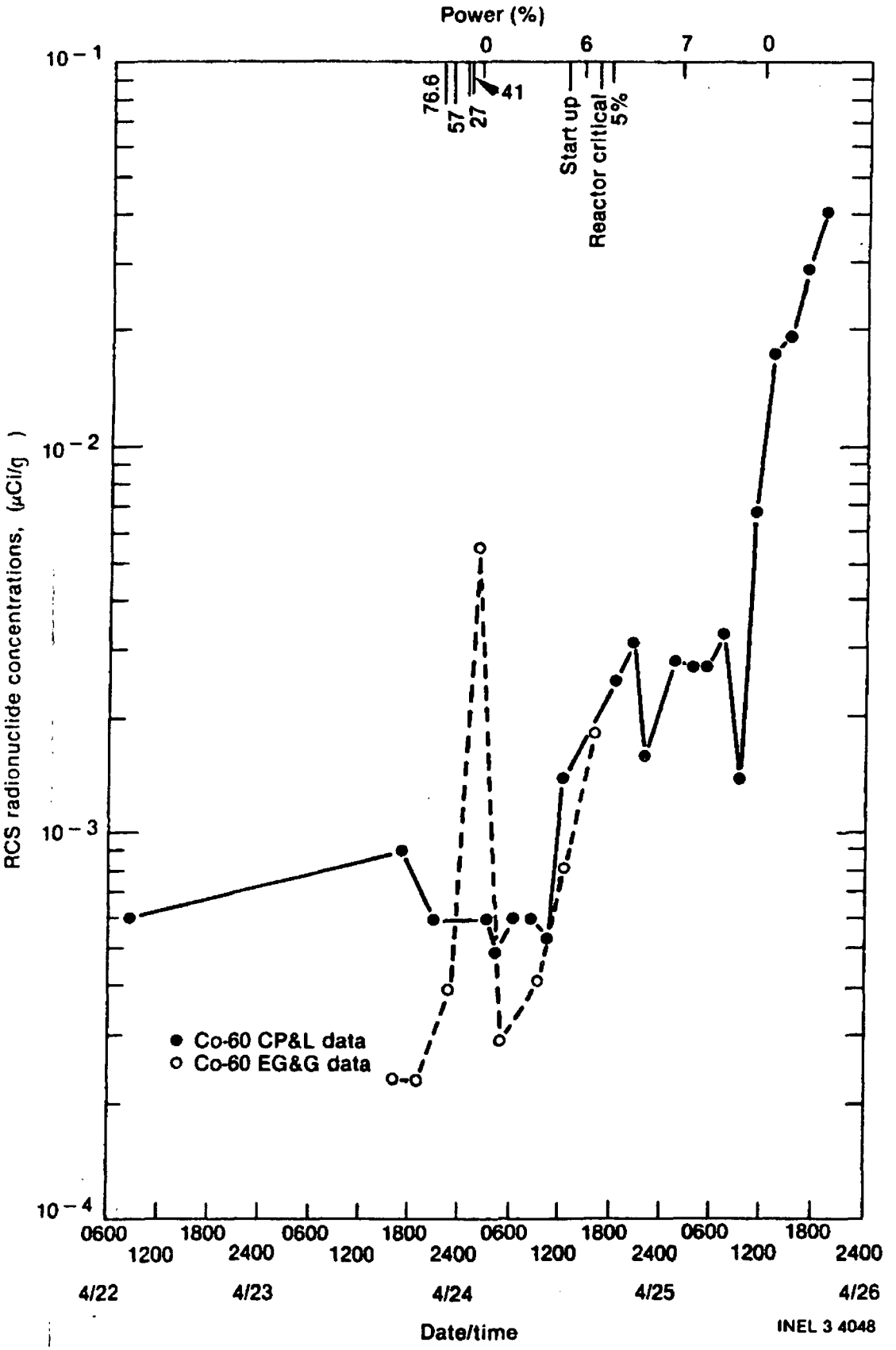


Figure 3-27. Unit No. 2 ^{60}Co Shutdown Spike

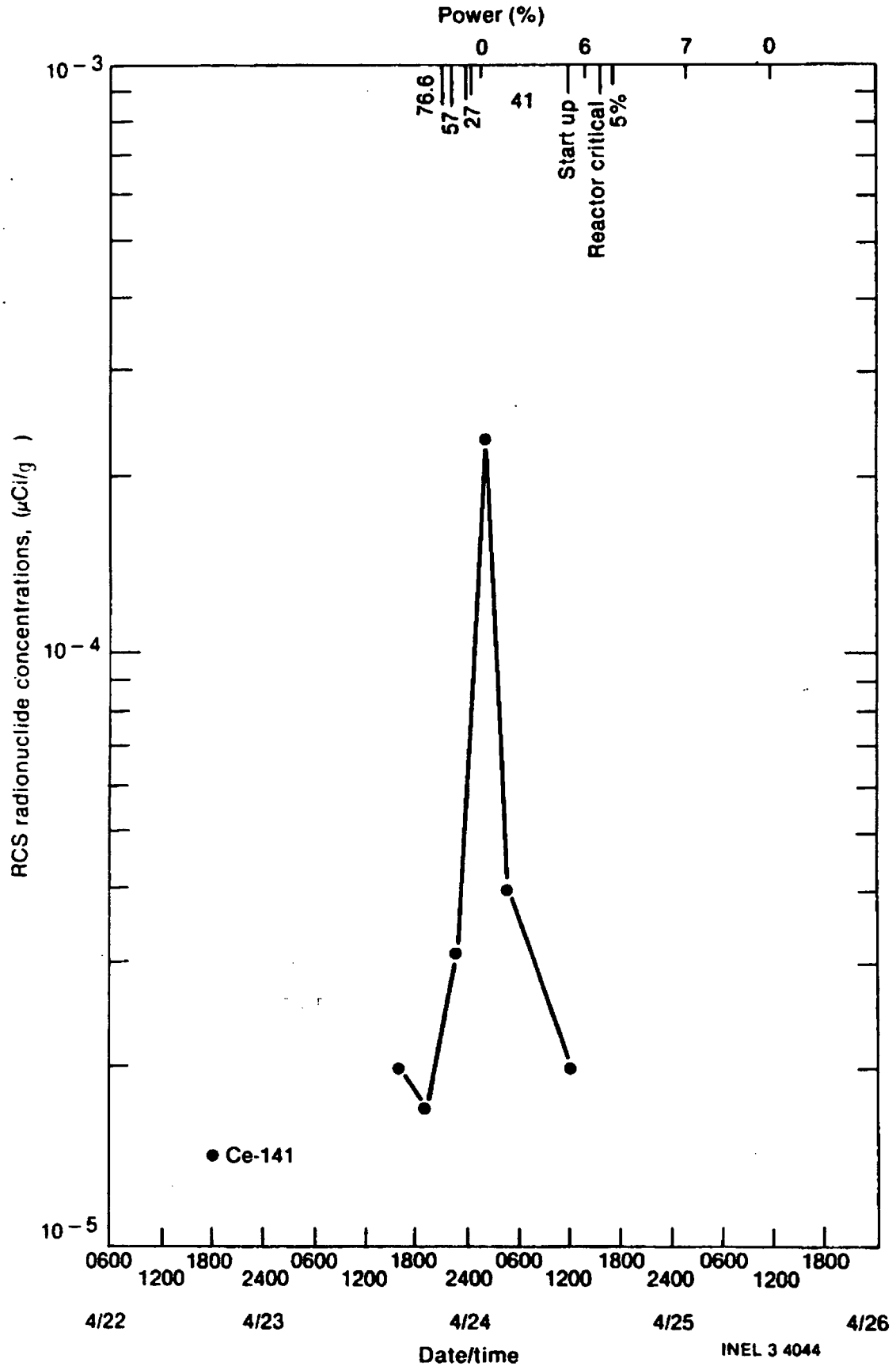


Figure 3-28. Unit No. 2 ^{141}Ce Shutdown Spike

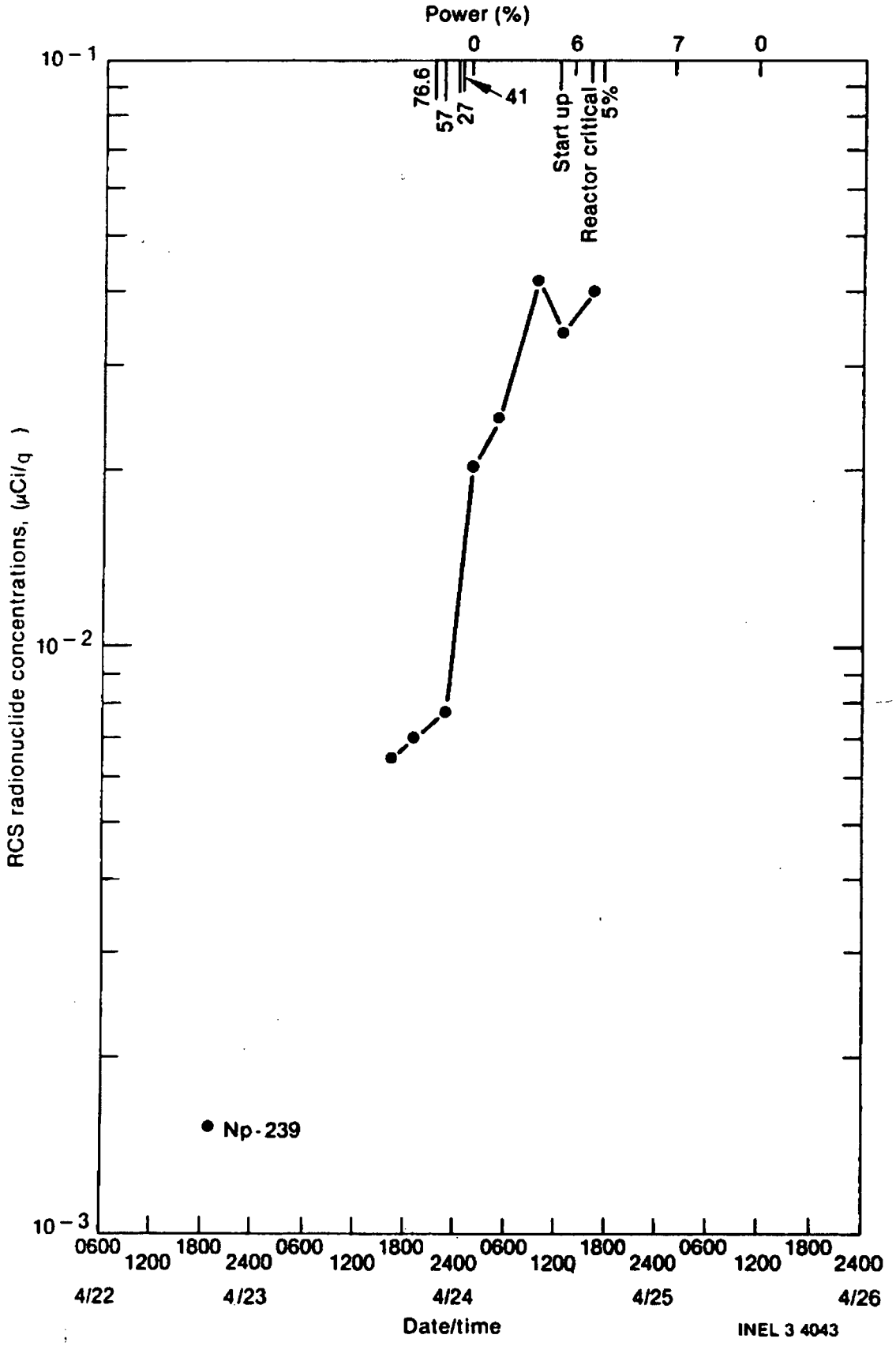


Figure 3-29. Unit No. 2 ^{239}Np Shutdown Spike

TABLE 3.18

RADIONUCLIDE SPIKING DATA FOR UNIT NO. 2

Nuclide	Spike Factor	Time of Peak (Hours after Shutdown)*	Spike Factor	Time of Peak (Hours after Shutdown)**
^{131}I	22.6	2	2.8	9.5
^{132}I	1.3	2	a	a
^{133}I	1.7	2	2.1	9
^{134}I		2	d	10.5
^{135}I	(a)	(a)	1.5	9
^{134}Cs	124	6	4.6	10.5
^{137}Cs	107	6	4.5	10.5
^{54}Mn	89[c]	1[b]		
^{56}Mn	22[c]	1[b]		
^{59}Fe	245[c]	1[b]		
^{65}Zn	4.8[c]	1[b]		
^{95}Nb	>100[c]	1[b]		
^{103}Ru	141[c]	1[b]		
^{141}Ce	13.6[c]	1[b]		
^{239}Np	2.9[c]	1[b]		
^{60}Co	7.8	1[b]	>29	15.5

a. No spike observed
* Shutdown that occurred at 0113 hours on April 24, 1982.
** Shutdown that occurred at 1112 hours on April 24, 1982.
b. Estimated time to spike maximum
c. Spike factor determined from data 0124 hours, April 24, 1982.
d. No data prior to 1122 April 24, 1982.

found in Appendix Tables B.3-1, B.3-3, B.3-111 and B.3-113 for Unit No. 1 and Appendix Tables B.3-10, B.3-11, B.3-112 and B.3-113 for Unit No. 2. Figure 3-30 shows the plotted A/Yλ data for both Units No. 1 and No. 2. The interpretation of the plots agree with the interpretation of the plots agree with the interpretation of the calculated values using Mayer's method.

Interpretation of Figure 3-30 for Unit No. 1 indicates the fission product release mode to be from direct recoil of tramp uranium. There was no significant change noted from the March 30 to May 25 values to the November 3, 1982 values.

Unit No. 2 fission product release is also interpreted to be from direct recoil of tramp or plated-out uranium. Fission product release is likely due to old plateout uranium from the previous 7 x 7 fuel loadings and is probably not due to failures of the newer 8 x 8 fuel. This interpretation is based on these observations: (a) that there was no difference in release mode pre- and post-refueling, (b) that the ^{239}Np concentration stayed at 10(-3) to 10(-2) μCi/g range pre- and post-refueling, (c) that if there were significant fuel failures, a diffusion component should have affected the slope of the graph and (d) historical stack noble gas and reactor coolant data indicate fuel failure in the older 7 x 7 fuel which increased to an equilibrium level and has not changed much since.

A further point to be made in support of the conclusion that direct recoil is the release mode is the comparison of RCS radioiodine concentrations in Unit No. 1 and Unit No. 2. The isotopic radioiodine ratios in both units are essentially identical, although Unit No. 2 concentrations are several orders of magnitude higher. In order to maintain ^{134}I in the highest concentration, the short half-life ^{134}I must be getting into the RCS without significant delay after fission. This means that the uranium would have to be external to the zirconium cladding. Studies at other PWRs[4,5] with different release mechanisms confirm this point.

3.6 Radionuclide Transport

Radionuclide behavior within and between the various systems can generally be described by first order equations. This section describes those mathematical relationships used to facilitate interpretation of the data for Units No. 1 and 2.

3.6.1 Main Steam

Main steam sample probes have not proven to be reliable for obtaining representative samples of main steam. In order to validate the steam probes in both units, samples of downstream liquids are required. In a normal pump forward system these samples are CFD inlet, HDDT outlet and SJAE. Also required are the volumes of the HDDT and the hotwell; and flow rates of the main steam, CFD inlet, HDDT outlet and SJAE. These parameters can then be used with the following equation to calculate a main steam concentration.

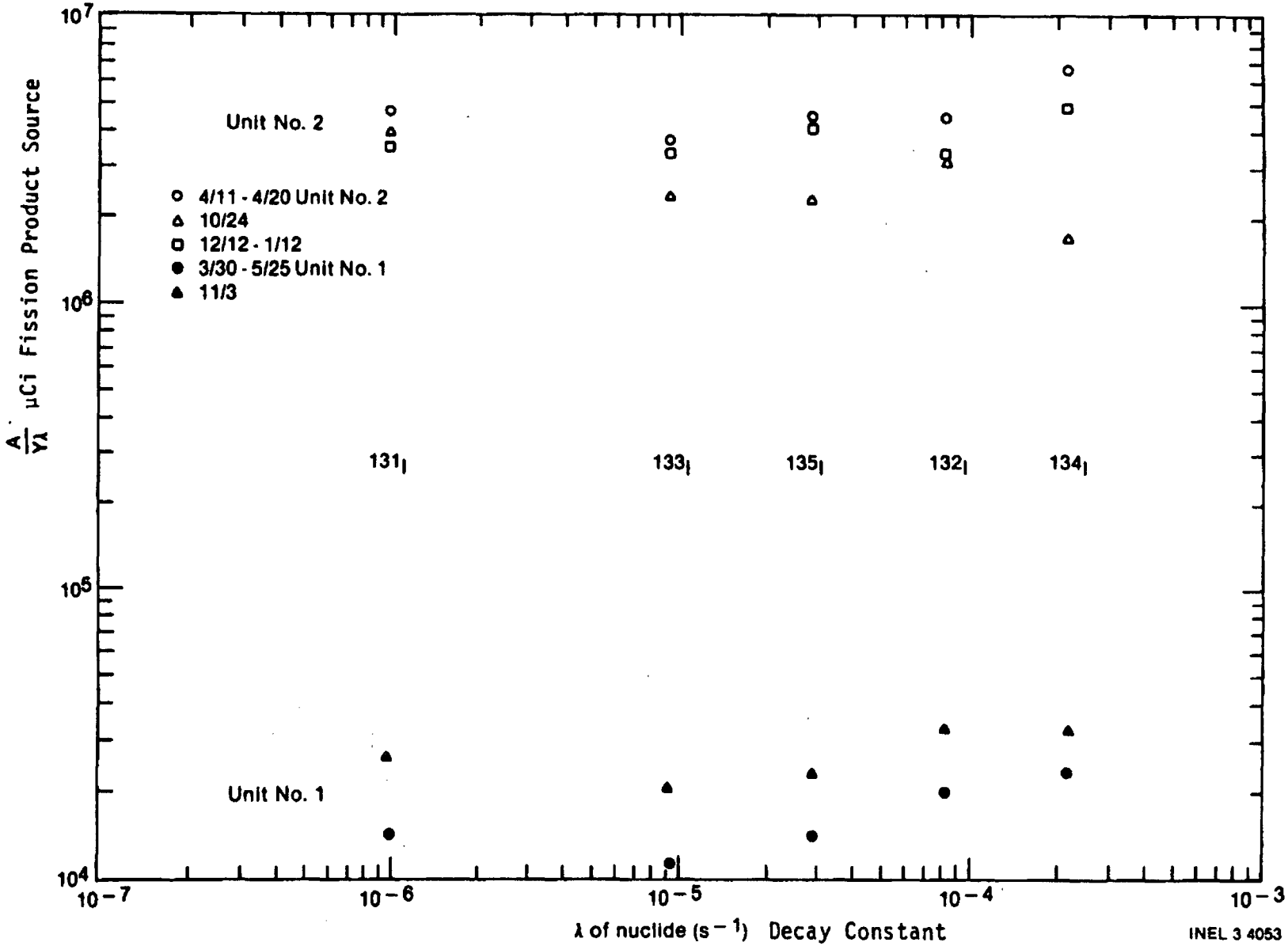


Figure 3-30. A/Yλ for radioiodines in Units No. 1 and No. 2.

$$C_{ms} = \left[\frac{C_c F_c e^{\lambda_i t_1} + C_{pf} F_{pf} e^{\lambda_i t_2} + C_a F_a}{F_{ms}}\right] e^{\lambda_i 120}$$

Where:

C_{ms} = calculated main steam concentration, μCi/g
C_c = CFD inlet concentration, μCi/g
C_{pf} = HDDT outlet concentration, μCi/g
C_a = SJAE concentration, μCi/g
F_c = CFD inlet flowrate, kg/s
F_{pf} = HDDT outlet flowrate, kg/s
F_{ms} = main stream flowrate, kg/s
F_a = SJAE flowrate, kg/s
λ_i = decay constant of radionuclide, s^{-1}
t_i = mean residence time in hotwell, s
t_2 = mean residence time in HDDT, s
120 = main steam transit time, s

Where:

$$t_1 = \frac{M_h}{F_c} (\ln 2)^{-1}$$

$$t_2 = \frac{M_p}{F_{pf}} (\ln 2)^{-1}$$

M_h = standing mass of water in hotwell, kg
M_p = standing mass of water in HDDT, kg

Unit No. 1 activity concentrations and flow parameters were used to validate the main steam probe. Results of the calculations show that the main steam probe concentrations agree, within statistics, with the calculated concentrations. Therefore, the conclusion is that the main steam probe for Unit No. 1 does allow for representative sampling. The SJAE loss was ignored as samples of SJAE offgas did not contain radioiodines at measurable concentrations.

Validation of the Unit No. 2 main steam probe was complicated by a reactor coolant blowdown to the hotwell during the measurement period. The equation for C_{ms} was therefore modified to account for the increased CFD inlet concentrations:

$$C_{ms} = \frac{C_c F_c e^{\lambda_i t_1} - C_b F_b + C_a F_a + C_{pf} F_{pF} e^{\lambda_i t_2}}{F_{ms}}$$

Where:

C_b = reactor coolant concentration, μCi/g

F_b = blowdown flowrate, kg/s

Results of the calculations indicate that the main steam probe does not allow for representative sampling. Measured main steam radionuclide concentrations were higher than calculated values by factors of 6.4 to 7.1. The SJAE loss was ignored as measured release rates, in (μCi/s) of radioiodines were less than one percent of the CFD transport rate (μCi/s).

3.6.2 Cleanup System Behavior

Filter/demineralizer and deepbed demineralizer function is removal of impurities in liquid systems. These impurities may be Cl^-, SiO_2, metal ions and radionuclides. Performance can be evaluated by calculating decontamination factors (DFs) for any of these parameters. A DF is calculated by dividing the inlet concentration by the outlet concentration. The amount of impurity retained on the demineralizer can then be calculated by use of the following equation:

$$I = \bar{C}_i F_i \left(1 - \frac{1}{DF}\right) t$$

Where:

I = amount of impurity on demineralizer

$\bar{C}_i$ = average concentration of impurity in feed stream

F_i = flowrate of feedstream

DF = Decontamination factor

t = elapsed time demineralizer was operated

For radionuclides at equilibrium conditions in the reactor, the amount of any radionuclide on a demineralizer can be calculated by use of this equation:

$$I = \frac{\bar{C}_i F_i \left(1 - \frac{1}{DF}\right)}{\lambda_i} \left(1 - e^{-\lambda_i t}\right)$$

Where:

λ_i = decay constant of radionuclide

t = elapsed time the demineralizer bed has been in service

Units of the terms must be compatible in both equations.

3.6.3 Predictive Model Results

Modeling of a system is beneficial in that it allows for prediction of a parameter's behavior for system changes prior to initiating any change. Use of models, therefore, allows for optimization of various parameters without using the traditional "try it and see" philosophy. In these studies, radionuclide transport through the RC/MS system in pump forward BWRs was the subject of the model. Using the data presented in this report, a model was developed which allowed for prediction of equilibrium condition radionuclide behavior for a specific reactor power mode. However, when attempts were made to predict radioiodine concentrations at different power modes, the model grossly overpredicted. Sensitivity analysis revealed the transport term which defines the fractional movement from the reactor vessel into the main steam was the main problem.

The following discussion describes the mathematical model developed to predict radionuclide concentrations throughout a pump forward BWR RC/MS system. Input parameters to the model are steam flowrates through the system at some power level, DF's of filter and demineralizer systems, and reactor coolant and feedwater radionuclide concentrations. So that the reader may have a better understanding of the model, a general description of the terms is required. The quantity of tracer in a compartment is denoted by q and has the unit of μCi. Rate of transport through a pathway is denoted by R and has the units of μCi/hr. A rate constant is the fractional change of q in a compartment with time and is denoted by k which has the unit of hr^{-1}. A radioactive decay constant is denoted as λ_i and has the unit of hr^{-1}.

Figure 3-31 is a schematic of the model showing the different compartments and transport terms used in defining radionuclide transport in Units No. 1 and 2. Eight compartments were chosen to describe the model which allowed for maximum use of sample information and plant design information. These compartments are (1) reactor vessel, (2) all components from the main steam lines to exhaust from the LP turbines, (3) condenser hotwell, (4) CFD's, (5) CDD's, (6) HDDT, (7) all components from CDD and HDDT outlets to the feedwater inlet to the reactor vessel and (8) RWCS FD.

Table 3.19 lists the differential equations which were used to describe the movement of material in and out of each compartment and the solutions to these equations for equilibrium conditions. Table 3.20 lists all of the final equations and defines each parameter. Where possible numerical values are stated for the various parameters.

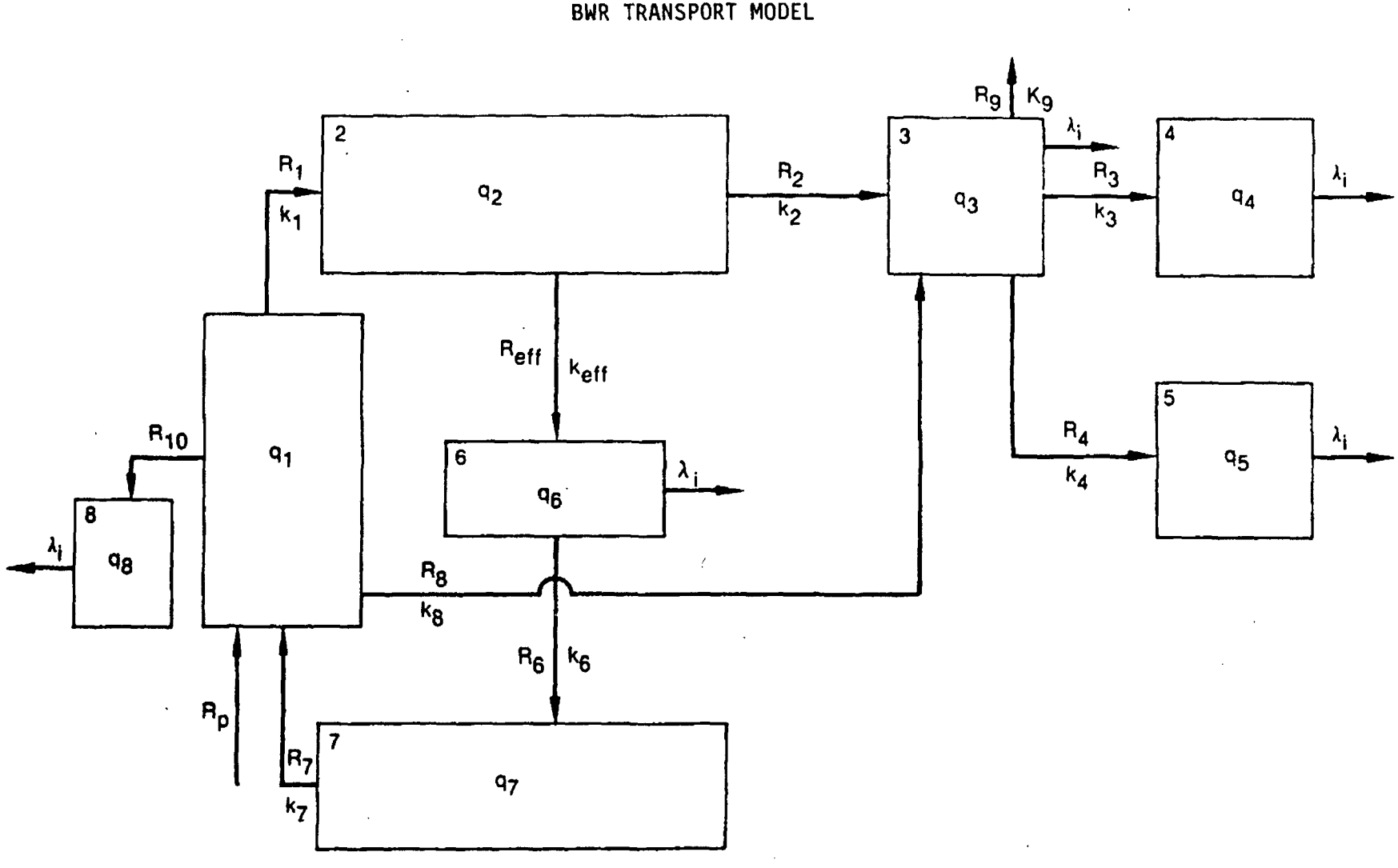


Figure Figure 3-31. Pump Forward BWR Transport Model

TABLE 3.19

MODEL DIFFERENTIAL EQUATIONS AND SOLUTIONS

A. $\frac{dq_1}{dt} = R_7 + R_p - k_{10}q_1 - k_8q_1 - k_1q_1 - \lambda_i q_1 \quad \therefore \quad q_1 = \frac{R_7 + R_p}{k_{10} + k_8 + k_1 + \lambda_i}$

B. $\frac{dq_2}{dt} = R_1 - k_2q_2 - k_{eff}q_2 - \lambda_i q_2 \quad \therefore \quad q_2 = \frac{R_1}{k_2 + k_{eff} + \lambda_i}$

C. $\frac{dq_3}{dt} = R_2 + R_8 - k_3q_3 - k_4q_3 - k_9q_3 - \lambda_i q_3 \quad \therefore \quad q_3 = \frac{R_2 + R_8}{k_3 + k_4 + k_9 + \lambda_i}$

D. $\frac{dq_4}{dt} = R_3 - \lambda_i q_4 \quad \therefore \quad q_4 = \frac{R_3}{\lambda_i}$

E. $\frac{dq_5}{dt} = R_4 - \lambda_i q_5 \quad \therefore \quad q_5 = \frac{R_4}{\lambda_i}$

F. $\frac{dq_6}{dt} = R_{eff} - k_6q_6 - \lambda_i q_6 \quad \therefore \quad q_6 = \frac{R_{eff}}{k_6 + \lambda_i}$

G. $\frac{dq_7}{dt} = R_6 - k_7q_7 - \lambda_i q_7 \quad \therefore \quad q_7 = \frac{R_6}{k_7 + \lambda_i}$

H. $\frac{dq_8}{dt} = R_{10} - \lambda_i q_8 \quad \therefore \quad q_8 = \frac{R_{10}}{\lambda_i}$

TABLE 3.20

MODEL EQUATIONS AND PARAMETERS

$$q_1 = a_1 m_1 \qquad R_1 = q_1 k_1 = R_2 + R_{eff}$$

$$k_1 = \frac{(R_2 + R_{eff})}{F_1/a_1 \times F_1/m_1} = \frac{R_2 + R_{eff} - R_8}{a_1 * m_1}$$

$$R_2 = a_3 F_{3+4} - R_8 + R_9$$

$$R_8 = a_1 F_8$$

$$R_{eff} = R_6 \, e^{\lambda_i t} \qquad t = \frac{t_{\frac{1}{2}}}{\ln 2}$$

$$R_q = Q_i \bullet 3660$$

$$k_3 = \frac{(R_2 + R_8) \cdot (1 - 1/DF_i)}{q_3}$$

$$k_4 = \frac{R_2 + R_8 \cdot [1 - (1 - 1/DF_i)]}{q_3}$$

$$q_4 = \frac{k_3 q_3}{\lambda_i} (1 - e^{-\lambda_i t}) + q_{4_0} e^{-\lambda t}$$

TABLE 3.20 (Cont.)

MODEL EQUATIONS AND PARAMETERS

$$q_5 = \frac{k_4 q_3}{\lambda_i}\left(1 - e^{-\lambda_i t}\right) + q_{5_0} e^{-\lambda t}$$

$$k_8 = R_8/q_1$$

$$R_6 = a_6 F_6$$

$$k_6 = R_6/q_6$$

$$R_7 = a_7 F_7$$

$$q_3 = a_3 m_3$$

$$R_3 = k_3 q_3$$

$$R_4 = k_4 q_3$$

$$q_6 = a_6 m_6$$

$$R_p = a_1 m_1\left(\lambda_i + F_8/m_1 + \frac{a_2}{a_1}\frac{F_1}{m_1}\right) - a_7 F_1 \quad \text{with } F_1 \equiv F_7$$

$$R_{10} = a_1 F_{10}$$

$$k_{10} = F_{10}/m_1$$

TABLE 3.20 (Cont.)

MODEL EQUATIONS AND PARAMETERS

$$q_8 = \frac{R_{10}\,(1 - 1/DF_i)}{\lambda_i}\,(1 - e^{-\lambda_i t}) + q_{8_0}e^{-\lambda t}$$

m_1 = mass of reactor coolant (lbs) 5.60(5)

m_3 = mass of condenser hotwell water (lbs) 3.335(6)

m_6 = mass of HDDT water (lbs) 1.417(5)

F_1 = main steam flowrate (lbs/hr) 7.918(6)

F_2 = flowrate of main steam to condenser (lbs/hr) 6.384(6)

F_{eff} = flowrate of condensed steam to the HDDT (lbs/hr) 1.584(6)

F_6 = flowrate out of HDDT (lbs/hr) 1.584(6)

F_7 = feedwater flowrate (lbs/hr) 7.968(6)

F_8 = reactor coolant blowdown to condenser (lbs/hr) 5.0(4)

F_{10} = RWCU flowrate (lbs/hr) 5.0(4)

q_1 = tracer in reactor vessel (μCi)

q_2 = tracer in turbine (μCi)

q_3 = tracer in condenser hotwell (μCi)

q_4 = tracer in CFD (μCi)

q_5 = tracer in CDD (μCi)

q_6 = tracer in HDDT (μCi)

q_7 = tracer in feedwater (μCi)

q_8 = tracer in RWCU (μCi)

TABLE 3.20 (Cont.)

MODEL EQUATIONS AND PARAMETERS

a_1 = reactor coolant concentration (μCi/lb)

a_2 = main steam concentration (μCi/lb)

a_3 = CFD inlet concentration (μCi/lb)

a_6 = HDDT outlet concentration (μCi/lb)

a_7 = feedwater concentration (μCi/lb)

k_1 = rate constant into main steam (hr^{-1})

k_2 = rate constant from turbine to condenser (hr^{-1})

k_3 = rate constant CFD inlet (hr^{-1})

k_4 = rate constant CDD inlet (hr^{-1})

k_{eff} = rate constant to HDDT (hr^{-1})

k_6 = rate constant from HDDT to feedwater (hr^{-1})

k_7 = rate constant from feedwater to reactor vessel (hr^{-1})

k_{10} = rate constant to RWCU

$DF_i = \frac{\bar{a}_i \text{ in}}{\bar{a}_i \text{ out}}$ or $\sum_i \frac{DF_i}{n}$ decontamination factor

R_1 = rate of radionuclide transport to main steam μCi/hr

R_2 = rate of radionuclide transport to condenser μCi/hr

R_3 = rate of radionuclide transport to CFD μCi/hr

R_4 = rate of radionuclide transport to CDD μCi/hr

R_{eff} = rate of radionuclide transport to HDDT μCi/hr

R_6 = rate of radionuclide transport to feedwater from HDDT μCi/hr

R_7 = rate of radionuclide transport to reactor μCi/hr

TABLE 3.20 (Cont.)

MODEL EQUATIONS AND PARAMETERS

R_{10} = rate of radionuclide transport to RWCU μCi/hr

R_p rate of radionuclide production in reactor μCi/hr

R_q = rate of radionuclide out the main stack μCi/hr

Q_i = μCi/s out the main stack

3660 = s/h

4. LIQUID RADWASTE TREATMENT SYSTEM

4.1. System Description and Sample Points

The original design of the liquid radwaste treatment system was to collect and treat radioactive liquid waste of two general types (i.e., low and high quality). The low quality liquid radwaste which contains a higher proportion of solids or other contaminants, such as high chloride concentrations, was transferred to the floor drain collection tank for storage, then processed through demineralizers and the floor drain filter, and subsequently discharged to the canal. The high quality liquid radwaste was transferred to the liquid radwaste system, processed through the waste collection filter/demineralizer (FD), and the waste collection demineralizer then either discharged or reused as reactor feedwater.

During the in-plant measurement period at the Brunswick plant, the liquid radwaste system was not being operated as designed. Various portions of the systems were not in operation (e.g., the 20 and 50 gpm waste evaporators) or were not being used per design. The three regenerant vessels were being used as deepbed demineralizers (DD), termed the regenerative demineralizer tanks, and a concrete tunnel was being used as a storage tank. According to plant personnel, the quantity of liquid radwaste generated was near system capacity. In order to process more liquid radwaste, some portions of the system were bypassed or used as substitutes for non-operable components (e.g., all FDs were used as substitutes for the waste collection FD). As a result of these problems and other associated operational difficulties, the plant staff had instituted a major modification program to upgrade the capacity of the waste treatment system.

Figure 4-1 shows the general sources, system components, and simplified liquid flow paths of the liquid radwaste treatment system as it was being operated during the in-plant measurement period. Tables 4.1 and 4.2 list the associated component data for the tanks, FDs, and DDs that constitute the system. Note that the following discussion will address the normal flow of liquids through the liquid radwaste treatment system. Keep in mind that during the in-plant source term measurement period liquids could and routinely were moved and/or overflowed and then cascaded into other collection tanks and radwaste treatment trains. There are two principal tanks where liquid radwaste was collected: the floor drain collection tank and the waste collection tank. These tanks were used as the primary feed tanks for the processing streams, although the waste surge tank (radwaste sources - auxiliary surge tank, floor drain recovery system and waste demineralizer outlet) and the auxiliary surge tank (radwaste sources - residual heat removal systems, condensate storage tank overflows, waste sample sump discharge and waste surge pump discharge) were processed periodically.

From the floor drain collection tank, the liquid waste was transferred to one of the four waste neutralizer tanks. The liquid in this tank was then processed simultaneously through the parallel regenerant vessels, noted as regenerative demineralizer tanks in Figure 4-1, which were converted to DDs. The mixed bed resin used in these tanks was either used condensate

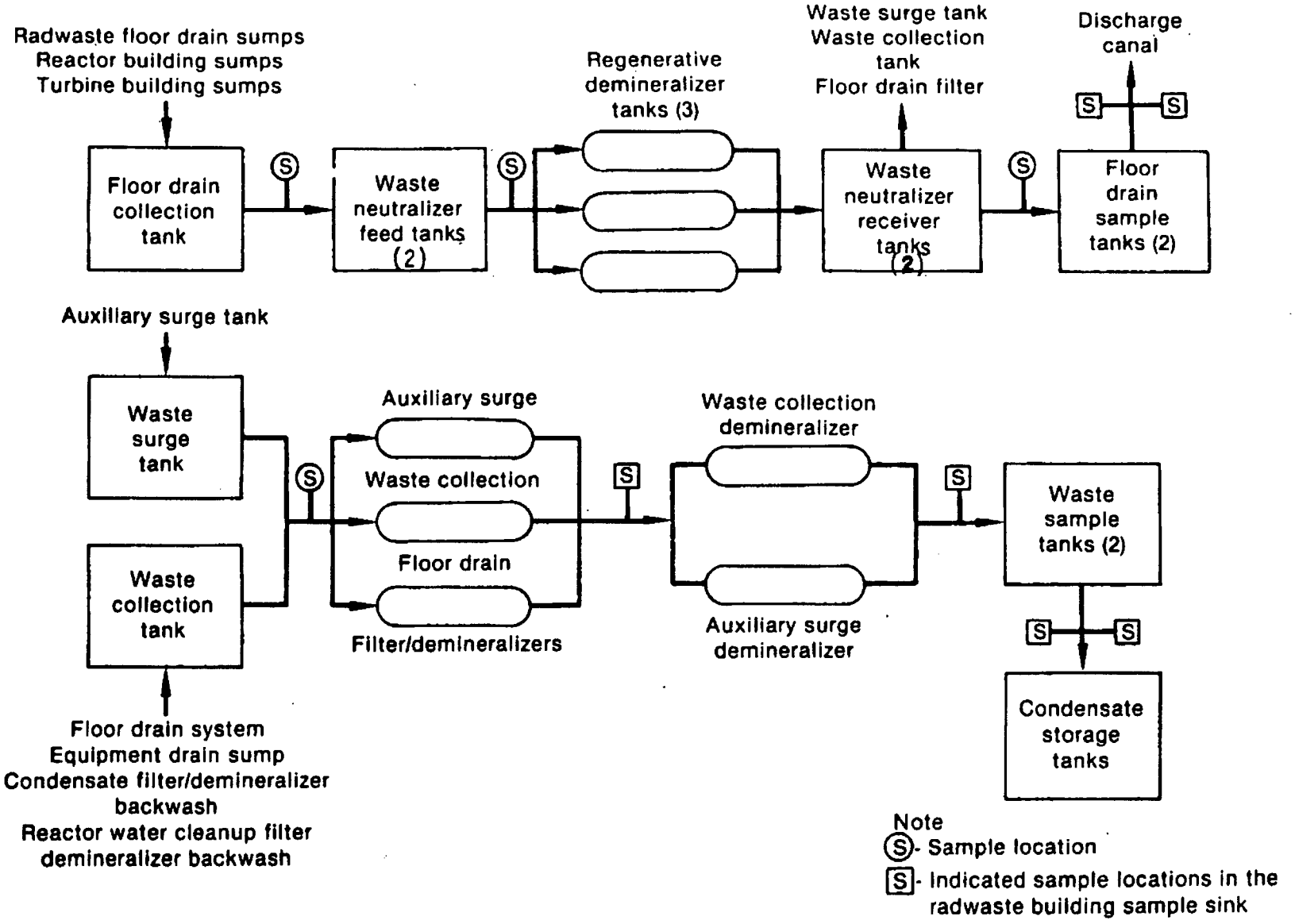


Figure 4-1. Diagram of Liquid Radwaste Treatment System

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TABLE 4.1

LIQUID RADWASTE TREATMENT SYSTEM COMPONENT DATE - TANKS

Item[a]	Name	Number	Capacity (each) gals[b]	Design Temp °F	Design Press psig	Material	Release Pathway
FDCT	Floor drain collection tank	1	11,100	70-140	c	d	Radwaste high conductivity sump
WNT	Waste Neutralizer tank	4	17,000	70-140	c	d	High conductivity sump
FDST	Floor drain sample tanks	2	21,600	70-140	c	d	Radwaste floor drain sump "A"
WCT	Waste collection tank	1	32,000	70-140	c	d	Radwaste floor drain tank
Aux surge	Auxiliary Surge tank	1	178,000	70-140	c	d	Waste surge tank
Waste surge	Waste surge tank	1	57,200	70-140	c	d	Radwaste floor drain tank
WST	Waste sample tanks	2	21,600	70-140	c	d	Radwaste equipment drain sump
CST	Condensate storage tanks	2	500,000	NA	c	d	Auxilary Surge tank
DDT	Detergent drain tanks	2	NA	70-140	c	d	North floor drain sump
DD	Regenerant vessels	3	NA	NA	NA	d	WNT

a. Item - Plant tank designation.
b. Effective capacity rather than design volume.
c. Atmospheric pressure.
d. Stainless steel.

TABLE 4.2

LIQUID RADWASTE TREATMENT SYSTEM COMPONENT DATA - FILTERS AND DEMINERALIZERS

Item	Name/Function	Resin Volume (ft^3)	Design Flow Rate (gpm)	Type of Resin	Design Temp (°F)	Design Press (psig)	Filter Type
ASF	Auxiliary surge filter	2	200	21H 202H	125	150	Coated on resin
WCF	Waste collection filter	2	200	21H 202H	125	150	Coated on resin
FDF	Floor drain filter	2	200	21H 202H	125	150	Coated on resin
DDT filter	Detergent drain filter	NA	NA	--	NA	NA	Nylon cloth filter
WCD	Waste collection demineralizer	180	200	Graver GR-3	150	150	Mixed bed
ASD	Auxiliary surge demineralizer	100	200	Graver GR-3	150	150	Mixed bed

NA - Not Available

demineralizer resin that no longer met the demineralization requirements of the condensate cleanup system (i.e., low ion exchange capacity or too high of a pressure differential across the bed), or new resin if condensate resin was not available. Resin volume of each tank was dependant on which resin was used. These volumes were 40 ft^3 of new resin or 180 ft^3 of used condensate resin. The effluent from the regenerant vessel was then returned to one of the four waste neutralizer tanks used as a receiver tank. Characterization of the behavior of an individual resin bed (regenerant vessel) was impossible as the necessary sample locations required to isolate an individual resin bed were not present. Therefore, all resin beds were evaluated together. The inlet and receiver waste neutralizer tanks were sampled locally at the pump discharge.

The demineralized liquid waste in the waste neutralizer tank, normally B or D, then was transferred either to the floor drain sample tanks for discharge to the canal, to the waste collection tank, or to the waste surge tank for further processing prior to reuse as reactor feedwater. The quantity of liquid waste sent to the floor drain sample tanks depended upon the water quality of the waste and the plant demineralized makeup water requirements at that time. If feedwater was required, a portion of the demineralized floor drain waste was transferred to the waste collection tank which also received waste liquid from equipment drains and the waste water produced when the condensate FD beds were backwashed. Either the waste collection tank or its alternate, the waste surge tank, was used as the feed tank for the remainder of the waste collection system. These tanks could only be sampled locally at the pump outlets. Low quality water was at times processed through these tanks as evidenced by samples which contained visible solids.

As indicated in Figure 4-1, the liquid waste present in the waste collection tank was processed through one of three FDs used for particulate removal, although the waste collection FD was normally used. The waste collection FD's resin was changed frequently, often every several hours, as low quality waste water (i.e., containing large amounts of solids) was processed quite often. Also, the septums used to contain the floculant resin were damaged quite often from pressure loading. The remaining FDs shown in Figure 4-1 were used interchangeably as reserve systems for the waste collection FD. Decontamination factor (DF) measurements could be made across individual FDs in this system as only one FD was in service at any time and inlet and outlet samples could be taken at plant installed sample locations. The outlet sample of the waste collection FD was also used as the inlet sample for the waste collection DD.

The waste collection DD was used as the principal demineralizer in this system, although the auxiliary surge DD was used as a reserve. Measurements of DF were made on these DD beds during the in-plant measurement period. However, interpretation of the DF results were difficult as (a) the history of the resin was uncertain, (b) the poor quality of the liquid waste processed (i.e., some waste came from concrete-lined sumps) resulted in DD resin beds being changed generally weekly, (c) the DDs were arbitrarily exchanged and (d) the radwaste source could

change hourly from high to low quality waste. Due to the above stated reasons any attempts at characterizing the behavior of the demineralizers is of questionable value.

From the waste collection DD, the liquid waste was transferred to the waste sample tanks for sampling to determine whether the system effluent was of adequate chemical quality either to be sent to the condensate storage tanks for reuse as feedwater, or to be discharged. If the water was not of adequate quality, and feedwater was required, it could be transferred to the waste collection tank for reprocessing.

The remaining operational liquid effluent treatment system that was present at the Brunswick plant during the measurements was the detergent drain system. This system was composed of two tanks and a cloth filter as listed in Tables 4.1 and 4.2. This system is sampled prior to discharge to the canal. Both CP&L and EG&G obtained samples of the effluent prior to release. Few releases were made (i.e., 1-2 per week). The detergent drain tanks receive radioactive waste from the reactor building detergent drains, the personnel decontamination area, and the hot laundry. The only sample location present for this system was the detergent drain tank pump, which is located before the filter. Therefore, no filter DF measurements were possible. As originally designed, the oily drain tank was released via this pathway; however, current practice was to save oily waste in drums for shipment offsite.

All other effluent treatment systems present at the Brunswick plant during the in-plant measurement period were not operational. These systems had either been permanently taken out of service (e.g., the oily drain tank and the 20 gpm waste evaporator) or were being modified as was the case of the 50 gpm evaporator.

4.2. Sampling Procedures

Two types of sample locations were used for the liquid radwaste treatment system measurements: plant installed sample points located in the Radwaste Building sample sink and local samples taken at the drain valves on transfer pumps. Figure 4-1 indicates the type of sample points used for each sample type. At plant installed sample locations, samples were taken only when that portion of the system being sampled was in steady state operation. For samples taken at pump outlets a purge time of not greater than 1 minute was required because of the close proxmity to the sampled tank. In all cases, at least one 450 ml sample was taken. Duplicates were taken if a filtered sample was desired.

As discussed previously, solid and chemical contaminants, which may have been radioactive, were present in the liquid radwaste system. Visible contaminants were generally found in samples from the floor drain collection tank, the waste neutralizer tanks, and the waste collection tanks. Settling of the radioactive solids may have biased the measurement data, producing results lower than would be actually present. This results because the

gamma spectrometer system was calibrated using homogeneous standards and a heterogeneous sample solution was being measured. Settling was observed prior to analysis in many instances; and in some cases, when filtered samples were taken, the filter would plug before the entire 450 ml sample could be filtered. A second filter would then be used when required. Resin beads, which could contain concentrated radionuclide contaminants, were also observed in samples from these tanks. These resin beads could strongly bias the data. For example, a sample taken of the waste collection sump (May 3, 1982) indicated $^{134,137}Cs$ concentrations of 0.1 μCi/g and an ^{131}I concentration of 0.1 μCi/g. These concentrations were much higher than those measured in reactor coolant. All instances where these problems occurred are noted in the data tables.

4.3 Discussion of Results

The radionuclide concentrations for all samples taken are listed in Appendix Tables B.4-1 to B.4-12. Decontamination factors were calculated, as detailed in Appendix A, for all FDs and DD beds where inlet and outlet samples could be taken. In addition, DFs for the total floor drain system (i.e., the total system from floor drain collection tank to the floor drain sample tank) and the total waste collection system (i.e., the total system from waste collection tank to the waste sample tanks) were calculated. Median DFs were calculated; however, the data could be misleading due to the limited number of samples taken and the reader should use caution in using these values.

For some samples, duplicates were taken and filtered prior to analysis. These samples were taken to determine the fraction of radionuclide activity present as filterable solids for components of the floor drain and waste collection systems. In addition, filtered DF measurements for particulate and dissolved fraction were made for some FD and DD samples.

4.3.1 Tanks and Release Pathways

As previously stated, there were only two principal tanks used as collection points for liquid waste to be processed. They are the floor drain collection tank and the waste collection tank. Few samples of these tanks were taken because the sample locations are at tank transfer pump drain valves whose flow could not easily be controlled and the sample locations were in a portion of the radwaste building that was normally flooded with highly contaminated water. The data for these two tanks should be used cautiously as solids and resin beads were observed in most samples.

4.3.1.1 Floor Drain Collection Tank

The floor drain collection tank samples (Appendix Table B.4-1) were all taken during or within a few days of power operation for both Units No. 1 and No. 2, except the sample taken on May 6, 1983, which was taken 10 days after the Unit No. 2 shutdown. Few samples of the system were taken because of the priority placed on other systems, and because during shutdown

the system was often out of service for extended periods. All samples taken during power operation both before and after the Unit No. 2 refueling show the presence of ^{132}I (half-life 2.3 hours) and ^{135}I (half-life 6.6 hours). The presence of these radionuclides indicate that only a few hours passed from the time when the reactor coolant left the reactor system to when it reached the floor drain collection tank. A measure of the transit time to the tank is not possible as the liquid radwaste came from both reactors which had different radionuclide coolant concentrations. Also, the quantity coming from each source was not known. During the in-plant measurement period, the principal source of the high activity waste, based upon conversations with plant personnel, was leakage from the control rod drive mechanisms (~30 gpm per reactor).

Filtered sample data for the floor drain collection tank (Table 4.3) indicate that the radioiodines and cesiums were principally ionic as would be expected and that the corrosion products were predominantly particulate. These data also indicate that no appreciable concentration of iodines or cesiums occurred on resins as ^{131}I and ^{137}Cs filterable fracations were small.

The May 6, 1982, sample of the floor drain collection tank, which was taken shortly after the Unit No. 2 refueling outage began on April 24, 1982, contained no detectable ^{133}I nor ^{135}I and the ^{24}Na concentration was an order of magnitude lower than the previous sample on April 7, 1982. A sample of Unit No. 2 reactor coolant taken on May 1, 1982, showed no detectable short half-life radioiodines nor ^{24}Na. Other radionuclides present in the sample had half-lives that were long enough that the measured concentrations in the sample could be influenced by the presence of Unit No. 2 reactor coolant in the system. These facts indicate that most of the activity that was present in this system was due to Unit No. 2 leakage; however, this does not imply that Unit No. 2 had a higher coolant leakage rate than Unit No. 1 as the coolant radioiodine concentrations were several orders of magnitude higher in Unit No. 2.

Another observation that may be made concerning the floor drain collection tank samples is that the radionuclide concentrations in the tank remained similar both before and after the Unit No. 2 refueling. This indicates that the sources and quantities of the radionuclides present in the system had not been significantly affected by refueling. This observation is consistent with reactor coolant concentration measurements from Units No. 1 and No. 2.

4.3.1.2 Waste Collection Tank

The radionuclide concentrations present in the waste collection tank were of the same order of magnitude ($\sim 10^{-4}$ $\mu Ci/g$) as those present in the floor drain collection tank. Radionuclides with short half-lives (e.g., ^{132}I and ^{134}I) were also noted in most samples from this tank.

TABLE 4.3

PERCENT OF RADIONUCLIDE ACTIVITY FOUND IN PARTICULATE FORM FOR THE FLOOR DRAIN SYSTEM

Nuclide	Floor Drain Collection Tank 4/7/82	Waste Neutralizer Tank B 4/7/82	Waste Neutralizer Tank B 4/20/82	Waste Neutralizer Tank D 5/19/82	Waste Neutralizer Tank B 5/19/82
^{131}I	10	78	46[b]	9.5	1.7
^{133}I	5.7	52	~100[c]	a	<7.8
^{135}I	4.1	a	a	a	a
^{134}Cs	2.9	24	37[b]	2.9	2.6[b]
^{136}Cs	a	a	a	2.5	4.4
^{137}Cs	3.4	29	36[b]	3.1	3.4
^{24}Na	<2.6(-1)	<9.5[c]	a	<0.1	<0.1
^{51}Cr	78	96[b]	51[b]	91	62
^{54}Mn	48	89[b]	49[b]	62	21[b]
^{59}Fe	~100[c]	~100[c]	50[b]	>96	>72
^{57}Co	a	a	a	>12	>5.7
^{58}Co	42	85	42[b]	40	13[b]
^{60}Co	7.7[b]	89	49[b]	46[b]	19[b]
^{65}Zn	50	~100[c]	58[b]	46	28
^{91}Sr	<18	a	a	a	a
^{91m}Y	>53[c]	a	a	a	a
^{93}Y	>9.0[c]	a	a	a	a
^{95}Zr	a	a	a	>47	>27
^{95}Nb	a	a	a	>64	>50
^{99}Mo	a	>33	>30	a	a
^{103}Ru	a	>50[c]	>36	>76	>38
^{110m}Ag	~100[c]	80[b]	a	a	a
^{140}Ba	47	80	64	>34	12[b]
^{140}La	~100[c]	86	44[b]	92	>84
^{141}Ce	c	>58	62	>72	>96
^{144}Ce	c	a	a	a	a

TABLE 4.3 (CONT)

PERCENT OF RADIONUCLIDE ACTIVITY FOUND IN PARTICULATE FORM FOR THE FLOOR DRAIN SYSTEM

Nuclide	Waste Neutralizer Tank C 5/24/82	Waste Neutralizer Tank A 5/24/82	Waste Neutralizer Tank D 5/26/82	Waste Neutralizer Tank B 5/26/82	Waste Neutralizer Tank D 5/27/82
^{131}I	>14	26	17	28	6.2
^{133}I	[a]	[a]	[a]	[a]	[a]
^{134}Cs	4.2[b]	2.8[b]	5.1	44	3.9
^{136}Cs	[a]	[a]	[a]	[a]	1.8
^{137}Cs	5.2	3.2	5.4	47	4.8
^{24}Na	[a]	<38	<13	[a]	0.1
^{51}Cr	>97	98	98	97	86
^{54}Mn	90[b]	86[b]	74	98	53
^{59}Fe	98[b]	97[b]	96	>98	100[c]
^{57}Co	>51	>17	>39	>27	>10
^{58}Co	86	66	60[b]	92[b]	29[b]
^{60}Co	89[b]	89[b]	60[b]	96[b]	35[b]
^{65}Zn	>76	90	61[b]	>93	43
^{95}Zr	[a]	[a]	>80	>80	>48
^{95}Nb	>89[b]	>87[b]	>63	>89	>77
^{103}Ru	>67[b]	>75	>89	>90	>43
^{110m}Ag	[a]	[a]	>91	>92	>70
^{140}Ba	[a]	[a]	>60	>43	>22
^{140}La	>83[b]	>69	94	85	83
^{141}Ce	50	>70	>85	>82	>34
^{144}Ce	[a]	[a]	>68	[a]	>18[c]

TABLE 4.3 (CONT)

PERCENT OF RADIONUCLIDE ACTIVITY FOUND IN PARTICULATE FORM FOR THE FLOOR DRAIN SYSTEM

Nuclide	Waste Neutralizer Tank B 5/27/82	Floor Drain Sample Tank B 4/7/82	Floor Drain Sample Tank B 4/21/82	Floor Drain Sample Tank B 6/8/82
^{131}I	6.4	2.0	90	12
^{133}I	a	<15	88[b]	a
^{135}I	a	a	>81	a
^{134}Cs	9.1	14	62	18
^{136}Cs	>15	a	a	a
^{137}Cs	12	13	65[b]	21
^{24}Na	a	<2.3	a	a
^{51}Cr	83	40	93[b]	76[b]
^{54}Mn	84	75	96[b]	74[b]
^{59}Fe	100[c]	>57	~100[c]	77
^{57}Co	a	a	>17	a
^{58}Co	24[b]	~100[c]	~100[b]	64
^{60}Co	81[b]	62	97	64[b]
^{65}Zn	>60	a	>82	81
^{95}Zr	>26	a	>39	>66
^{95}Nb	>23	a	>59[b]	78[b]
^{99}Mo	a	a	>54[b]	a
^{103}Ru	>56	a	>41	~100[b]
^{110m}Ag	>62	a	>75	a
^{124}Sb	a	a	a	>41
^{125}Sb	a	a	a	>30
^{140}Ba	a	a	>36	>19
^{140}La	77	33	93	>32
^{141}Ce	>49	a	~100[c]	a
^{144}Ce	>3.8	a	a	>28[c]

a. Value not measured.

b. Use with caution results in grab and filtered samples were not consistent.

c. Radionuclide not detected in either dissolved or particulate fraction.

A comparison of the radionuclide concentrations in this tank with those in the floor drain collection tank indicate very similar radionuclide concentrations, within a factor of 2-3. This implies that the radionuclide and dilution water sources for both waste tanks were similar. Discussions with plant personnel confirmed this observation. Plant personnel indicated that because of the large volume of water being processed, tanks were overflowing and the water was being mixed in floor drains, sumps, and other tanks.

All waste collection system samples were taken during power operation of both Units No. 1 and No. 2 except the November 1982 samples which were taken during the Unit No. 2 shutdown. When Unit No. 2 was shutdown on October 22, 1982, the radionuclide concentrations in the waste collection tank dropped by factors of 5-10 indicating that Unit No. 2 was the principal source of radioactive materials in the liquid radwaste at this time. No reason for the increase in the $^{58,60}Co$ concentration for the November 16, 1983, sample was found in the plant records. The April 23, 1982, sample data were taken when the waste surge tank was used as the feed tank. This tank generally contained lower activity waste and was processed infrequently. The data listed in Appendix Table B.4-2 verify this, with less-than values for the radioiodines and other short half-life radionuclides, indicating that a significant delay had occurred after the liquid waste was removed from the reactor coolant system.

The presence of short half-life radionuclides in the waste collection tank, which were not present in the floor drain sample tank (i.e., the receiver tank for the floor drain system), indicates that high activity reactor coolant waste water was discharged directly to the waste collection tank from the reactors rather than being processed through the floor drain system. The principal source for the high activity waste was again stated by plant personnel as being control rod drive leakage and equipment drains.

4.3.1.3 Discharge Tanks

The effluent release tanks for the floor drain and waste collection systems were the floor drain and waste sample tanks, respectively. The waste collection system effluent was reduced in radionuclide content most effectively as indicated by a comparison of the waste sample tank and floor drain sample tank data (see Appendix Tables B.4-7 and B.4-8). The waste sample tank data indicate that normally only low concentrations ($\sim 10^{-7}$ $\mu Ci/g$) of ^{137}Cs were transferred to the condensate storage tanks (other radionuclides were measured as less-thans). On the other hand, the floor drain sample tanks, when released, normally contained the following radionuclides: ^{131}I, ^{134}Cs, ^{137}Cs, ^{24}Na, ^{51}Cr, ^{54}Mn, ^{59}Fe, ^{58}Co, ^{60}Co, ^{110m}Ag and ^{140}La at 1(-7) to 1(-6) $\mu Ci/g$. This is an expected result as two processing steps (i.e., the waste collection FD and the waste DD) were used in the waste collection system, whereas only a FD was used in the floor drain system.

A general comparison of the floor drain system and waste collection system indicates a greater diversity of radionuclides present in the floor drain system (e.g., ^{95}Zr, ^{95}Nb, ^{141}Ce, ^{144}Ce). However, the particulate fractional distributions for the common radionuclides are similar.

The remaining liquid radwaste discharge pathway present at the Brunswick plant was the detergent drain tank system. Samples taken from this tank indicated the presence of $^{134,137}Cs$, ^{51}Cr, ^{54}Mn and $^{58,60}Co$. These radionuclides were measured at concentrations of 1(-6) to 1(-5) μCi/g. No short-lived radionuclides were measured, indicating that there was probably a considerable delay period between the time the radioactive material left the reactor and when it reached the detergent drain tank for release. This is to be expected, since the principal source of detergent drain tank water was the hot laundry. The reason for the higher radionuclide concentrations in the July 15, 1982, sample is not known. As previously noted, detergent drain tank releases were filtered through a cloth filter downstream of where the samples are taken, thereby lowering the radionuclide releases to the discharge canal. The actual DFs are not known as samples were not available downstream; however, the cloth filter would be relatively ineffective for ionic radionuclides such as cesium. As a result of the low radionuclide concentrations in this tank and the few tank releases, this release point contributed only a small fraction of the total plant release.

4.3.2 Demineralizers

From the two waste collection tanks (i.e., the floor drain and waste collection tanks) radioactive liquid waste was processed through FDs for the removal of solids and/or DDs for the removal of soluble radionuclides. Typically, between 50,000 and 100,000 gallons per day of liquid radwaste was processed through each of the demineralizer systems shown in Figure 4-1.

The liquid waste present in the waste collection tank was processed as shown in Figure 4-1 through one of three FDs and one of two DDs. In this system, during the in-plant measurements, FD beds were changed as often as several times per shift as a result of large pressure drops due to high solids content in the waste liquid. The suspected sources of particulate material were either concrete-lined sumps used as storage tanks or the floor drains which might be expected to contain large amounts of particulate material.

No evaluation of a specific resin bed's behavior was done for either the floor drain DDs (i.e., the regenerant vessels) or the waste collection DD. This was because, as previously discussed, (a) the DDs could not be individually isolated, (b) the source of the resin used was not known, and (c) the waste water source was of very poor quality. Therefore, a comparison of the DFs for each of the component DDs with the total floor drain and waste collection systems could not be performed.

Ranges of DFs for the waste collection system demineralizers are listed in Table 4.4. Total DFs and median values for the floor drain and waste collection systems are listed in Tables 4.5 and 4.6, while DFs for particulate and dissolved radionuclides are listed in Tables 4.7 to 4.9 for the waste collection system.

4.3.2.1 Floor Drain Demineralizers

The initial demineralizer system to be considered is the floor drain system which potentially contains the most chemically contaminated radwaste. This floor drain tank was the receiver tank for the floor drains and some sumps which might be expected to be highly chemically contaminated. The DFs for the regenerant vessel DD samples taken prior to May 26, 1982, were generally less than ten as shown in Table 4.10. An examination of the data in this table indicates a sudden increase in the DFs on May 26, 1982. The DF for ^{131}I increased to approximately 60 and the ^{137}Cs DF increased to 230; however, the crud radionuclide DFs increased to between 10 and 20. Plant records indicate that the DD resin was changed in this system on May 22, 1982, as it was depleted and the demineralizer was subsequently placed in operation intermittently starting May 25, 1982. The May 19, 1982, DFs listed in Table 4.10 are very low (< 5) which would tend to verify that the resin was depleted. The May 24, 1982, data also indicate low DFs, but these data must be used with caution as the feedwater used for these measurements was taken from tanks C and A which are normally used only as reserve storage tanks and not as feed tanks. No record of the period of operation using these tanks is listed in the plant records. The May 26, 1982, sample exhibited the best DFs (~100) measured for all samples of this system which would indicate that the resin beds had been recharged as stated in the plant records, although probably with condensate resin, as the DFs are not typical of new resin (i.e., > 1000). The May 27, 1982, sample DFs measured after approximately one day's operation indicate a reduction of a factor of five for the DF for ^{131}I in comparison with the May 26, 1982 data, although other radionuclide DFs remained within a factor of two over the one-day period. The ^{137}Cs and ^{110m}Ag DFs dropped by a factor of 2. Therefore, it appears that the anion demineralization capacity of this DD was being depleted more quickly than the cation demineralization capacity. This is an expected result based on the probable presence of high concentrations of chlorides in the feedwater and the fact that the condensate demineralizers are used primarily for chloride removal. Based on these data, the demineralization capability of the waste neutralization resin beds probably dropped quickly, within a few days, and their primary function became solids removal after the beds had become depleted for ion removal.

The filtered sample data listed in Table 4.7 taken between May 19, 1982, and May 27, 1982, provide further insight into the demineralizer behavior of the waste neutralization DD. The radioiodines, radiocesiums, and ^{24}Na were principally ionic (i.e., not filterable) and, as would be expected, these are the radionuclides with the highest DFs after the

TABLE 4.4

RANGE OF DFs FOR THE WASTE COLLECTION SYSTEM DEMINERALIZERS

Nuclide	Filter Demineralizer	Deepbed Demineralizers
^{131}I	5.1 ± 0.3 - > 6.6(2)	> 1.5 - 3 ± 1
^{132}I	> 18 - > 2.5(2)	a
^{133}I	4.8 ± 0.1 - > 1.6(3)	a
^{134}I	> 3.5 - > 29	a
^{135}I	9.6 ± 0.5 - > 5.5(2)	a
^{134}Cs	6.1 ± 0.1(-1) - 2.3 ± 0.1(2)	> 5.0 - 1.1 ± 0.3(2)
^{137}Cs	5.9 ± 0.1(-1) - 3 ± 1(2)	> 1.5 - 8 ± 2(1)
^{138}Cs	> 2.4(1)	a
^{24}Na	2.41 ± 0.06 - 7 ± 1(2)	> 1.2 - > 5.9(2)
^{51}Cr	2.91 ± 0.06(1) - 3 ± 1(3)	1.5 ± 0.5 - > 28
^{54}Mn	2.17 ± 0.06(1) - 3.0 ± 0.8(3)	> 1.3 - > 1.3(2)
^{59}Fe	2.2 ± 0.2 - > 1.2(3)	> 1.0 - > 15
^{57}Co	> 1.8 - > 12	a
^{58}Co	2.0 ± 0.1(1) - > 1.3(3)	> 1.1 - 9 ± 4(1)
^{60}Co	2.26 ± 0.06(1) - 1.4 ± 0.2(3)	4.1 ± 0.2 - 1.5 ± 0.4(2)
^{65}Zn	> 1.3 - > 2.6(2)	a
^{91}Sr	2.5 ± 0.2 - > 7.6(2)	a
^{91m}Y	< 1.1 - > 75	a
^{95}Nb	> 9.3	a
^{99}Mo	> 20 - > 1.0(2)	a
^{110m}Ag	7 ± 1 - 3 ± 1(2)	> 4 - > 7.0(1)
^{124}Sb	> 6.3	a
^{139}Ba	> 6.0 - > 2.0(2)	a
^{140}Ba	> 8.9 - > 2.0(2)	a
^{140}La	> 14 - > 7.0(2)	> 6.4(-1) - 7 ± 1(-1)
^{141}Ce	> 21 - > 53	a

a. Value not measured.

TABLE 4.5

DFs FOR THE TOTAL FLOOR DRAIN SYSTEM

Nuclide	4/7/82	5/6/82	Median
^{131}I	>4.3(1)	>1.6(2)	>1.0(2)
^{132}I	>6.2	a	>6.2
^{133}I	1.2 ± 0.4 (2)	a	1.2(2)
^{135}I	>1.3(1)	a	>1.3(1)
^{134}Cs	4.1 ± 0.2 (1)	>2.4(3)	>1.2(3)
^{136}Cs	a	>2.4(1)	>2.4(1)
^{137}Cs	3.8 ± 0.3 (1)	1.5 ± 0.4 (3)	7.7(2)
^{24}Na	1.6 ± 0.1 (1)	>1.0(1)	>1.3(1)
^{51}Cr	2.0 ± 0.2 (1)	>4.1(2)	>2.1(2)
^{54}Mn	2.8 ± 0.2 (1)	1.37 ± 0.07(2)	8.2(1)
^{59}Fe	>1.2(1)	>4.6(1)	>2.8(1)
^{58}Co	3.5 ± 0.9 (1)	1.5 ± 0.2 (2)	>9.2(1)
^{60}Co	2.3 ± 0.1 (1)	1.29 ± 0.04(2)	7.6(1)
^{65}Zn	a	6 ± 2 (2)	6(2)
^{91}Sr	>1.8(1)	a	>1.8(1)
^{110m}Ag	3 ± 1	>8.0(1)	>4.1(1)
^{140}Ba	>3.5(0)	>5.3(1)	>2.8(1)
^{140}La	1.6 ± 0.8 (1)	>6.8(1)	>4.4(1)

a. Value not measured.

TABLE 4.6

DFs FOR THE TOTAL WASTE COLLECTION SYSTEM

Nuclide	3/31/82	4/7/82	4/23/82[b]	10/22/82
^{131}I	>3.6(2)	>9.8(2)	>7.5(0)	>2.2(2)
^{132}I	>5.6(2)	>1.8(2)	a	a
^{133}I	>1.4(3)	>8.2(2)	a	>2.3(2)
^{134}I	>8.7(1)	>2.8(1)	a	a
^{135}I	>7.2(2)	>1.2(3)	a	a
^{134}Cs	2.8 ± 0.2 (2)	>1.6(3)	2.9 ± 0.3 (1)	7 ± 1 (2)
^{137}Cs	3.1 ± 0.2 (2)	>3.4(3)	4.5 ± 0.7 (1)	1.0 ± 0.2 (2)
^{24}Na	>2.7(3)	>4.8(3)	a	>3.2(2)
^{51}Cr	>6.5(3)	>2.8(3)	1.0 ± 0.3 (2)	>8 ± 1 (1)
^{54}Mn	1.5 ± 0.2 (3)	1.1 ± 0.1 (3)	9 ± 1 (1)	5.0 ± 0.2 (2)
^{59}Fe	>7.2(2)	>1.3(1)	>2.0(1)	>1.6(2)
^{58}Co	6 ± 1 (2)	5 ± 2 (1)	>4.2(1)	5 ± 1 (2)
^{60}Co	2.1 ± 0.3 (3)	6.6 ± 0.6 (1)	7.9 ± 0.8 (1)	3.8 ± 0.1 (2)
^{65}Zn	>2.0(2)	a	a	>1.3(2)
^{91}Sr	>3.3(3)	a	a	a
^{91m}Y	>1.2(1)	a	a	a
^{99}Mo	>2.0(2)	>5.0(1)	a	a
^{110m}Ag	a	>5.2(2)	>1.9(2)	3.7 ± 0.8 (1)
^{139}Ba	>6.0(2)	>6.7(1)	a	a
^{140}Ba	>1.1(3)	>8.6(2)	a	>7.8(1)
^{140}La	>3.0(3)	>1.0(3)	2.2 ± 0.9 (1)	>1.2(2)
^{141}Ce	>7.5(1)	>3.2(1)	a	a

TABLE 4.6 (CONT)

DFs FOR THE TOTAL WASTE COLLECTION SYSTEM

Energy	10/26/82[b]	11/11/82	11/13/82	11/16/82	Median
^{131}I	4 ± 2 (2)	a	>2.0(1)	a	>2.8(2)
^{132}I	a	a	a	a	>3.7(2)
^{133}I	5 ± 2 (2)	a	a	a	>6.6(2)
^{134}I	a	a	a	a	>5.7(1)
^{135}I	>6.2(1)	a	a	a	>7.2(2)
^{134}Cs	>5.4(2)	>1.3(2)	>1.6(2)	1.9 ± 0.1 (1)	>2.2(2)
^{137}Cs	>8.2(2)	>2.3(2)	2.1 ± 0.4 (2)	1.9 ± 0.1 (1)	>2.2(2)
^{24}Na	>2.3(2)	>9.4(2)	>2.9(3)	>2.3(3)	>2.7(3)
^{51}Cr	>3.5(2)	>3.7(1)	8 ± 2 (1)	2.8 ± 0.4 (1)	>9.0(1)
^{54}Mn	>9.4(3)	5.3 ± 0.9 (2)	2.6 ± 2 (2)	7.5 ± 0.2 (1)	5.1(2)
^{59}Fe	>1.3(2)	>8.7(1)	>9.0(1)	7.0 ± 0.9 (1)	>8.8(1)
^{57}Co	>5.5	a	a	a	>5.5
^{58}Co	>9.4(2)	9 ± 3 (1)	1.2 ± 0.2 (2)	3.5 ± 0.4 (1)	1.1(2)
^{60}Co	>8.2(3)	3.0 ± 0.3 (2)	1.75 ± 0.05(2)	3.39 ± 0.06(1)	2.9(2)
^{65}Zn	>2.3(2)	>3.7(1)	a	3.3 ± 0.9 (1)	>1.3(2)
^{91}Sr	>4.0(1)	a	a	a	>1.6(3)
^{99}Mo	a	a	a	a	1.2(2)
^{110m}Ag	>9.8(1)	>4.5(1)	1.2 ± 0.2 (1)	1.2 ± 0.2 (1)	>4.5(1)
^{124}Sb	>9.5	a	a	a	>9.5
^{140}Ba	>1.0(2)	>4.0(0)	>1.2(1)	a	>1.0(2)
^{140}La	>2.6(2)	>2.0(1)	2.1 ± 0.3 (1)	>1.4(1)	>7.1(1)
^{141}Ce	a	a	a	a	>5.3(1)

a. Value not measured.

b. Inlet value is from the waste surge tank and the effluent is the waste demineralizer outlet.

c. Inlet value is a less-than.

TABLE 4.7

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR WASTE NEUTRALIZATION DEMINERALIZER

5/19/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{131}I	9.5	1.7	8.4	1.4	1.36 ± 0.01
^{133}I	a	<7.8	a	a	a
^{134}Cs	2.9	2.6[b]	1.5	1.4	1.22 ± 0.02
^{136}Cs	2.5	4.4	2.5	1.4	1.14 ± 0.08
^{137}Cs	3.1	3.4	1.5	1.4	1.20 ± 0.02
^{24}Na	<0.1	<0.1	c	2.0	1.92 ± 0.09
^{51}Cr	91	62	12	1.9	7.4 ± 0.4
^{54}Mn	62	21[c]	9.6	1.6	2.44 ± 0.02
^{59}Fe	>96	>72	12.9	c	1.7 ± 0.3 (1)
^{57}Co	>12	>5.7[c]	3.8	c	c
^{58}Co	40	13[b]	6.8	1.6	1.67 ± 0.04
^{60}Co	46[b]	19[b]	5.4	1.5	1.75 ± 0.04
^{65}Zn	46	28	5.6	2.4	2.2 ± 0.4
^{95}Zr	>47	>27	5.6	c	b
^{95}Nb	>64	>50	5.1	c	>1.6
^{103}Ru	>76	>38	6.2	c	>2.0
^{140}Ba	>34	12[b]	17	c	2.2 ± 0.8
^{140}La	92	>84	2.2	c	2.0 ± 0.2
^{141}Ce	>72	>96	3.1	c	1.1 ± 0.6

TABLE 4.7 (CONT)

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR THE REGENERANT VESSEL DEEPBED

5/24/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{131}I	>14	26	c	6.8(-1)	7 ± 1 (-1)
^{134}Cs	4.2[b]	2.8[b]	2.4	1.6	1.95 ± 0.05
^{137}Cs	5.2	3.2	2.8	1.6	1.85 ± 0.02
^{24}Na		>38	c	c	>3.3
^{51}Cr	>97	98	8.7(-1)	c	1.15 ± 0.05
^{54}Mn	90[b]	86[b]	3.1	2.2	3.8 ± 0.1
^{59}Fe	98[b]	97[b]	3.4	2.7	4.0 ± 0.2
^{57}Co	>51	>17	5.2	c	>1.0
^{58}Co	86	66	4.4	1.6	4.1 ± 0.2
^{60}Co	89[b]	89[b]	2.0	1.9	2.62 ± 0.05
^{65}Zn	>76	90	2.4	c	2.9 ± 0.4
^{95}Nb	>89[b]	>87[b]	3.0	c	2 ± 1
^{103}Ru	>67[b]	>75	2.5	c	c
^{140}La	83[b]	>69	2.2	c	5 ± 2
^{141}Ce	50	>70[c]	2.0	c	c

TABLE 4.7 (CONT)

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR THE REGENERANT VESSEL DEEPBED

5/26/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{131}I	17	28	33	62	6.0 ± 0.3 (1)
^{134}Cs	5.1	44	26	3.8(2)	1.40 ± 0.09(2)
^{137}Cs	5.4	47	24	3.7(2)	2.3 ± 0.1 (2)
^{24}Na	<13	a	a	a	>6.4(1)
^{51}Cr	98	97	14	16	1.49 ± 0.02(1)
^{54}Mn	74	98	7.8	1.1(2)	1.37 ± 0.04(1)
^{59}Fe	96	>98	12	c	1.4 ± 0.5 (1)
^{57}Co	>39	>27	a	a	4 ± 3
^{58}Co	60[b]	92[b]	c	1.0(2)	2.3 ± 0.1 (1)
^{60}Co	60[b]	96[b]	6.8	1.0(2)	1.39 ± 0.03(1)
^{65}Zn	61[b]	>93	7.0	c	1.3 ± 0.2 (1)
^{95}Zr	>80	>80	8.2	c	2 ± 1 (1)
^{95}Nb	>63	>89	11	c	1.4 ± 0.4 (1)
^{103}Ru	>89	>90	12	c	1.2 ± 0.2 (1)
^{110m}Ag	>91	>92	4	c	4.3 ± 0.4
^{140}Ba	>60	>43	20[b]	c	>1.3(1)
^{140}La	94	85	5.8[b]	3.0	7.8 ± 0.6
^{141}Ce	>85	>82	9.8	c	6 ± 2
^{144}Ce	>68	a	a	a	a

TABLE 4.7 (CONT)

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR REGENERANT VESSEL DEEPBED DEMINERALIZER

05/27/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{131}I	6.2	6.4	12	12	1.18 ± 0.05(1)
^{134}Cs	3.9	9.1	58	1.4(2)	1.3 ± 0.1 (2)
^{136}Cs	1.8	>15	c	29	>1.8(1)
^{137}Cs	4.8	12	47	1.3(2)	1.1 ± 0.1 (2)
^{24}Na	0.1	a	c	c	>5.8(1)
^{51}Cr	86	83	12	10	1.20 ± 0.09(1)
^{54}Mn	53	84	12	54	1.83 ± 0.07(1)
^{59}Fe	100[c]	100[c]	15	a	1.4 ± 0.2 (1)
^{57}Co	>10	a	a	a	a
^{58}Co	29[b]	24[b]	1.2(2)	93	2.6 ± 0.3 (1)
^{60}Co	35[b]	81[b]	9.1	65	2.0 ± 0.6 (1)
^{65}Zn	43	>60	9.5	c	>2.8(1)
^{95}Zr	>48	>26	12	c	c
^{95}Nb	>77	>23	27	c	>2.2
^{103}Ru	>43	<56	15	c	>5.2
^{110m}Ag	>70	>62	4.6	c	2.5 ± 0.6
^{140}Ba	>22	a	a	a	a
^{140}La	83	77	4.6	2.9	5 ± 2
^{141}Ce	>34	>49	5.5	c	>5.3
^{144}Ce	>18	> 3.8	11	c	>2.0

a. Value not measured.

b. Use results with caution—results in grab and filtered samples were not consistent.

c. Radionuclide not detected in either dissolved or particulate fraction.

TABLE 4.8

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR WASTE COLLECTION FILTER/DEMINERALIZER

4/7/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{131}I	98[b]	a	>9.5(3)	>3.4(1)	>6.6(2)
^{132}I	85[b]	a	>2.1(2)	>2.8(1)	>2.5(2)
^{133}I	94[b]	a	>1.14(4)	>7.9(1)	>1.6(3)
^{134}I	a	a	a	a	>2.8(1)
^{135}I	92[b]	a	>4.7(3)	a	>5.5(2)
^{134}Cs	95[b]	8.5	1.9(3)	9.9	2.3 ± 0.1 (2)
^{137}Cs	96[b]	8.4[b]	2.1(3)	8.0	2.6 ± 0.2 (2)
^{24}Na	80	> 9.1	>1.0(4)	2.6(2)	7 ± 1 (2)
^{51}Cr	99	>41	3.8(3)	>1.9(1)	3 ± 1 (3)
^{54}Mn	94[b]	>50	7.5(3)	>1.4(2)	3.0 ± 0.8 (3)
^{59}Fe	98	> 9.1	4.6(3)	>9.7	5 ± 3 (2)
^{58}Co	99[b]	> 9.1[c]	1.1(4)	>1.3(1)	>1.3(3)
^{60}Co	99	>60	4.2(4)	>1.0(2)	1.4 ± 0.2 (3)
^{65}Zn	c	>23	1.2(2)	c	>1.2(2)
^{91}Sr	>97	a	6.0(3)	c	>7.6(2)
^{91m}Y	a	a	a	a	>7.5(1)
^{99}Mo	a	a	a	a	>1.0(2)
^{110m}Ag	>97	a	6.2(2)	a	>7.0(1)
^{139}Ba	>95	c	>1.7(2)[b]	c	>1.0(2)
^{140}Ba	~100[b]	a	>7.1(3)	>2.5(1)	>1.7(2)
^{140}La	99[b]	a	>4.3(3)	>5.7	>4.1(2)
^{141}Ce	>95	a	>3.7(2)	c	>5.3(1)

TABLE 4.8 (CONT)

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR WASTE COLLECTION FILTER/DEMINERALIZER

11/11/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{131}I	<14	a	a	>1.5(1)	a,b
^{134}Cs	6.4[b]	<10	>7.3(1)	1.1(2)	>7.8(1)
^{137}Cs	6.0	< 5.0	>1.3(2)	9.8(1)	1.2 ± 0.2 (2)
^{24}Na	< 0.2	< 1.5	c	1.4(2)	8.4 ± 0.6 (1)
^{51}Cr	56	<11	3.1(2)	>3.2(1)	>3.7(1)
^{54}Mn	91[b]	72[b]	4.5(2)	>1.1(2)	4.0 ± 0.5 (2)
^{59}Fe	~100[b]	>12	3.9(2)	c	>5.2(1)
^{58}Co	70[b]	>23	3.6(2)	>4.6(1)	8 ± 2 (1)
^{60}Co	71[b]	>82	3.1(2)	>5.7(2)	2.6 ± 0.2 (2)
^{65}Zn	~100[b]	a	>2.3(2)	c	>3.7(1)
^{110m}Ag	> 77[b]	a	c	>3.0(1)	>2.2(1)
^{140}Ba	a	a	a	a	>8.9
^{140}La	32[b]	a	>2.1(2)	>3.2(1)	>3.0(1)

a. Value not measured.

b. Use results with caution--results in grab and filtered samples were not consistent.

c. Radionuclide not detected in either dissolved or particulate fraction.

TABLE 4.9

DFs FOR PARTICULATE AND DISSOLVED RADIONUCLIDES
FOR WASTE COLLECTION DEMINERALIZER

4/7/82

	Percent Particulate		Decontamination Factors		
Nuclide	Inlet	Outlet	Particulate	Dissolved	Total Sample
^{134}Cs	8.5	a	>5.4	>2.2(1)	>5.0
^{137}Cs	8.4[b]	<28	2.3	>1.0(1)	>8.7
^{24}Na	> 9.1	< 3.2	c	>2.7	>6.5
^{51}Cr	~100[b]	<26	3.0	c	>1.7
^{54}Mn	>50[b]	<50	1.0	c	>1.3
^{59}Fe	> 9.1	a	9.3(-1)	c	>1.2
^{58}Co	> 9.1	a	>3.0(-1)	c	c
^{60}Co	>60[b]	>52	>2.0	c	>5.7
^{65}Zn	>23	a	>6.2(-1)	c	c

a. Value not measured.

b. Use results with caution--results in grab and filtered samples were not consistent.

c. Radionuclide not detected in either dissolved or particulate fraction.

TABLE 4.10

DFs FOR THE REGENERANT VESSEL DEEPBED DEMINERALIZERS

Nuclide	5/19/82 Tanks D → B	5/24/82 Tanks C → A	5/26/82 Tanks D → B	5/27/82 Tanks D → B
^{131}I	1.36 ± 0.01	7 ± 1 (-1)	6.0 ± 0.3 (1)	1.18 ± 0.05(1)
^{134}Cs	1.22 ± 0.02	1.95 ± 0.05	1.40 ± 0.09(2)	1.3 ± 0.1 (2)
^{136}Cs	1.14 ± 0.08	a	>4.8(1)	>1.8(1)
^{137}Cs	1.20 ± 0.02	1.85 ± 0.02	2.3 ± 0.1 (2)	1.1 ± 0.1 (2)
^{24}Na	1.92 ± 0.09	>3.3[b]	>6.4(1)	>5.8(1)
^{51}Cr	7.4 ± 0.4	1.15 ± 0.05	1.49 ± 0.02(1)	1.20 ± 0.09(1)
^{54}Mn	2.44 ± 0.02	3.8 ± 0.1	1.37 ± 0.04(1)	1.83 ± 0.07(1)
^{59}Fe	1.7 ± 0.3 (1)	4.0 ± 0.2	1.40 ± 0.05(1)	1.4 ± 0.2 (1)
^{57}Co	a	>1.0	4 ± 3	a
^{58}Co	1.67 ± 0.04	4.1 ± 0.2	2.3 ± 0.1 (1)	2.6 ± 0.3 (1)
^{60}Co	1.75 ± 0.04	2.62 ± 0.05	1.39 ± 0.03(1)	2.0 ± 0.6 (1)
^{65}Zn	2.2 ± 0.4	2.9 ± 0.4	1.3 ± 0.2 (1)	>2.8(1)
^{95}Zr	a	a	2 ± 1 (1)	a
^{95}Nb	>1.6	2 ± 1	1.4 ± 0.4 (1)	>2.2
^{103}Ru	>2.0	a	1.2 ± 0.2 (1)	>5.2
^{110m}Ag	a	a	4.3 ± 0.4	2.5 ± 0.6
^{124}Sb	a	a	>5.0	a
^{140}Ba	2.2 ± 0.8	a	>1.3(1)	a
^{140}La	2.0 ± 0.2	5 ± 2	7.8 ± 0.6	5 ± 2
^{141}Ce	1.1 ± 0.6	a	6 ± 2	>5.3
^{143}Ce	1.1[b]	a	a	a
^{144}Ce	a	a	a	>2.0

a. Value not measured.

b. Inlet value is from the waste surge tank and the effluent is the waste demineralizer outlet.

c. Inlet valve is a less-than.

demineralizer change on May 22, 1983. The particulate fraction of the radioiodines at the outlet of the DD was greater than the inlet sample. This indicates that the new DD was less effective for particulates than for ionic materials. This is further confirmed by the data for the normally particulate radionuclides (e.g., $^{58,60}Co$, ^{59}Fe, and ^{54}Mn). The DFs for most of these radionuclides increased only by factors of between 3 and 10 indicating relatively low decontamination efficiencies for particulate material. The reason for the higher ^{51}Cr and ^{59}Fe DFs is not known.

4.3.2.2 Waste Collection Demineralizers

The DFs measured for the waste collection FD (Table 4.11) varied significantly over the period of the measurements. Plant records indicate that the March 31, 1982, sample was taken during or shortly after a precoat cycle (i.e., when the metal septum is loaded with resin) and, therefore, may not provide a characteristic DF measurement. The April 7, 1982, sample was taken when the floor drain FD had only been in service occasionally for several days and was being changed regularly (i.e., weekly). The remaining DF measurements made on this FD were also taken under varying operational conditions (i.e., changing feedwater quality and occasional operation). The changing quality of the feedwater was indicated by the fact that on some days the FD would be precoated every few hours and on other days would only be required to be changed at daily or longer periods. The system would also be operated only occasionally (i.e., on several hours and off several hours). This was a standard operational mode that did not provide the steady state periods of operation that are necessary for representative sampling. The two October 26, 1982, samples were taken from different filters and the FDs had been exchanged during the day. The data for the November 13 through November 16, 1982, period indicate variations found in the other waste collection filter data. These data indicate that a FD change occurred at least once during this period; however, this was not found in plant records nor were the periods of operation listed in plant records.

An attempt to characterize individual FDs based on the above noted sample data would be misleading as a result of the continuous change in modes of operation. The principal observations that can be made based on the data listed in Table 4.4 are (a) that the ionic species such as the radioiodines and radiocesiums appear to have DFs similar to the particulate radionuclides at some stages of bed depletion, (b) that the waste collection FD was relatively efficient for ionic radionuclides and (c) that the FDs demineralization capabilities were depleted more quickly (i.e., within a few days) than its filtration capability, as indicated by specific samples.

Two filtered samples were taken of the waste collection FD on April 7, 1983, and November 11, 1982. These data indicate that the radiocesiums and ^{24}Na were principally particulate, which was not as expected. The DFs for both groups are similar in these samples. No explanation was found as to why the DFs for ionic and particulate radionuclides were similar.

TABLE 4.11

DFs FOR THE WASTE COLLECTION FILTER/DEMINERALIZER

Nuclide	3/31/82	4/7/82	10/26/82	10/26/82[b]
^{131}I	5.1 ± 0.3	>6.6(2)	>1.0(2)	8.3 ± 0.5
^{132}I	>1.8(2)	>2.5(2)	>3.9(1)	>1.8(1)
^{133}I	6.7 ± 0.5 (2)	>1.6(3)	>2.2(2)	4.8 ± 0.1
^{134}I	>2.9(1)	>2.8(1)	>3.5	>2.4(1)
^{135}I	1.3 ± 0.2 (2)	>5.5(2)	>2.1(1)	9.6 ± 0.5
^{134}Cs	2.13 ± 0.06(1)	2.3 ± 0.1 (2)	6 ± 2 (2)	6.1 ± 0.1(-1)
^{137}Cs	2.20 ± 0.07(1)	2.6 ± 0.2 (2)	2.8 ± 0.4 (2)	5.9 ± 0.1(-1)
^{138}Cs	>2.4(1)	[a]	[a]	[a]
^{24}Na	8.2 ± 0.4 (1)	7 ± 1 (2)	2.0 ± 0.2 (2)	2.41 ± 0.06
^{51}Cr	2.91 ± 0.06(1)	3 ± 1 (3)	>4.0(2)	>4.9(1)
^{54}Mn	2.17 ± 0.06(1)	3.0 ± 0.8 (3)	6.8 ± 0.4 (2)	4.49 ± 0.1 (1)
^{59}Fe	2.2 ± 0.2	5 ± 3 (2)	>1.2(3)	>1.4(2)
^{57}Co	[a]	[a]	>1.2(1)	>1.8
^{58}Co	2.1 ± 0.2 (1)	>1.3(3)	7 ± 2 (2)	4.7 ± 0.6 (1)
^{60}Co	2.26 ± 0.06(1)	1.4 ± 0.2 (3)	7.5 ± 0.4 (2)	2.52 ± 0.05(1)
^{65}Zn	>1.3	>1.2(2)	>2.6(2)	>5.1(1)
^{91}Sr	1.8 ± 0.2 (2)	>7.6(2)	[a]	2.5 ± 0.2
^{91m}Y	>1.2(1)	>7.5(1)	[a]	<1.1(0)[c]
^{95}Nb	[a]	[a]	[a]	>9.3
^{99}Mo	>2.0(1)	>1.0(2)	[a]	[a]
^{110m}Ag	<2.5(1)[c]	>7.0(1)	3 ± 1 (2)	>1.4(1)
^{124}Sb	[a]	[a]	[a]	>6.3
^{139}Ba	>3.0(2)	>1.0(2)	[a]	>6.0
^{140}Ba	4.4 ± 0.4 (1)	>1.7(2)	>2.0(2)	1.6 ± 0.8 (1)
^{140}La	3.3 ± 0.2 (1)	>4.1(2)	>7.0(2)	3.8 ± 0.2
^{141}Ce	>2.1(1)	>5.3(1)	[a]	[a]

TABLE 4.11 (CONT)

DFs FOR THE WASTE COLLECTION FILTER/DEMINERALIZER

Nuclide	11/11/82	11/13/82	11/16/82
^{131}I	[a]	>2.0(1)	[a]
^{134}Cs	>7.8(1)	5.1 ± 0.1	2.2 ± 0.7 (2)
^{137}Cs	1.2 ± 0.2 (2)	5.4 ± 0.1	3 ± 1 (2)
^{24}Na	8.4 ± 0.6 (1)	1.09 ± 0.02(1)	6.3 ± 0.2 (1)
^{51}Cr	>3.7(1)	4.0 ± 0.5 (1)	>1.1(2)
^{54}Mn	4.0 ± 0.5 (2)	9.3 ± 0.4 (1)	2.0 ± 0.3 (3)
^{59}Fe	>5.2(1)	>4.5(1)	>5.6(2)
^{58}Co	8 ± 2 (1)	2.0 ± 0.1 (1)	4 ± 1 (2)
^{60}Co	2.6 ± 0.2 (2)	2.70 ± 0.05(1)	7.1 ± 0.3 (2)
^{65}Zn	>3.7(1)	[a]	>1.0(2)
^{110m}Ag	>2.2(1)	7 ± 1	>7.3(1)
^{140}Ba	>8.9	>1.0(1)	[a]
^{140}La	>3.0(1)	>1.4(1)	>1.4(1)

a. Value not measured.

b. Floor drain filter effluent, inlet sample opaque.

c. Inlet value is a less-than.

The range of DFs measured for the waste collection system DD, (Table 4.4) indicate that the waste collection DD was effective for both ionic and particulate radionuclides in most modes of operation where measurements were made. Many of the lower limit values are questionable as several feed tanks had been used on prior days which could have affected the outlet sample and hence the DF.

The filtered sample data taken of the DD outlet indicate that the normally particulate radionuclides were principally in the soluble form with exceptions of ^{51}Cr and ^{60}Co. Therefore, the DFs measured for these normally particulate radionuclides may result from their being in a soluble ionic form that may be adsorbed by the demineralizer. These samples had a larger soluble fraction than most of the filtered samples because they were taken downstream of the waste collection filter which retains large portions of the particulate radionuclides.

4.3.2.3 System DFs

For comparison purposes, the DFs for the total floor drain system (i.e., the floor drain collector tank to the floor drain sample tank) and the total liquid radwaste system (i.e., the waste collection tank to the waste sample tank) were calculated. These data should be used cautiously as intermediate tanks were used between the initial feed tank and the receiver tank, thereby causing a time delay that may impact the DFs for radionuclides with short half- lives. Also, changes in feedwater sources and feed tanks could affect the system DFs. Only two sets of DF data are listed in Table 4.5 for the floor drain system because of the difficulty in obtaining concurrent samples. For concurrent samples to be taken, it was necessary that both tanks be in a recirculation mode, which was not done regularly when the system was being sampled. The measured DFs on May 6, 1982, may have resulted from a recent resin bed change or a change in feed tanks. These DFs are generally higher than those measured for the DD in this system (see Table 4.10). No DD and system samples were taken on the same dates, as the DD was not in operation when the tanks were sampled; therefore, a direct comparison of the data is not possible.

Table 4.6 lists the DF data for the total waste collection system. Indicated DFs for this system are generally between 100 and 1000 for most radionuclides with the exception of the April 23, 1982, and November 16, 1982, samples. The April 23, 1982, sample was taken when the waste surge tank was being used as the temporary feed tank. Therefore, it is not certain whether the system outlet (i.e., waste sample tank) samples were representative of the processed waste surge tank effluent. The November 16, 1982, sample was taken shortly after a Unit No. 2 shutdown period. It is not clear why the radioiodines were not measurable at the system inlet.

A direct comparison of the FD and DD data with the system data for the waste collection system was not possible as most of the waste collection DF data are greater-thans, thereby preventing a direct comparison. However, a comparison of the DFs for both waste collection processing

streams and the component demineralizers was made for ^{131}I, ^{137}Cs and ^{60}Co respectively.

The waste collection system exhibited the best overall DFs for ^{131}I. DFs of ~100 for the two floor drain system samples and some waste collection FD samples were also measured. The poorest DFs were those measured for the waste collection DD and some regenerant vessel DD samples. The reason for the poor DFs may be the lower inlet concentrations for these demineralizers as there appears to be a general direct correlation between inlet concentration and DFs for most system components. The low DFs for the waste collection DD appear to follow the relationship between inlet concentration and DF. The regenerant vessel DD DFs that are low were taken on May 19, 1982, and May 24, 1982. The May 19, 1982, sample exhibited low DFs for all radionuclides, indicating that either there was bed breakthrough or the bed was fully depleted. The May 24, 1982, DF measurement was made between two tanks not normally used as feed and receiver tanks. Therefore, the measured DF may not reflect actual resin bed behavior and leaching of radionuclides from the bed may be occurring. Perhaps the only other observation that is possible, is that the waste collection FD, which is used for solids removal had, in some cases, good DFs for principally ionic radionuclides.

The inlet concentration versus DF correlations for ^{137}Cs follow the same general correlation pattern as the ^{131}I DFs. An inspection of the filter data for ^{137}Cs and ^{24}Na indicate that these radionuclides were principally (i.e., > 90%) ionic and the DFs are similar. The October 26, 1982, waste collection FD data and several waste collection DD samples did not follow the relationship between DF and concentration. The waste collection FD data were taken several hours prior to the replacement of the bed; therefore, either breakthrough or bed depletion had occurred. The waste demineralizer DF data were greater-than values and therefore the actual DF is not known.

The ^{60}Co DF data differs from the radiocesium data in that the ^{60}Co concentrations are generally higher (i.e., 1(-4) to 1(-3) μCi/g) and the DFs appear to be less dependent on inlet concentration. The DFs for most inlet concentrations lie in a band between 100 and 1000 The filter data indicate particulate fractions for $^{58,60}Co$ ranging between 13% and 100% for nearly all system components. Therefore, the ^{60}Co behavior was not similar to the principally ionic radionuclides (radioiodine and radiocesium) as would be expected. Filtration accounts for a portion of the measured DF and therefore the DFs for the radiocobalts do not follow ionic behavior to a significant extent.

The DFs for the remaining principally particulate radionuclides ^{51}Cr, ^{54}Mn, ^{59}Fe, ^{65}Zn, ^{95}Nb, ^{99}Mo and ^{110m}Ag follow the same trends as

the ^{60}Co DFs and are generally within a factor of 2 or 3 of the ^{60}Co DFs. These radionuclides had particulate fractions ranging between 30 and 100%, similar to ^{60}Co. Therefore, their behavior can be characterized as being similar to ^{60}Co in that they are retained in the resin beds by both filtration and in some instances by adsorption effects.

From these data the radionuclides measured may be broken up into two groups, principally ionic and particulate, with the ionic radionuclides being removed more effectively as the inlet concentration increases. The particulate radionuclides are affected principally by filtration and appear to be retained by both FDs and DDs beds with no correlation with inlet concentration. However, there appears to be one exception. The waste collection DD ^{60}Co data appears to be more similar to the radiocesium behavior in that there may be a correlation between concentration and DF. This could result from the lower inlet concentrations for the waste DD and the filtration effects of the waste collection FD (e.g., most of the particulate material had been filtered out).

4.3.3 Dissolved and Particulate Fractions

Various samples, including demineralizer inlet and outlet samples, were filtered using 0.45 μm filters in order to determine the relative amounts of particulate and dissolved radionuclide material present. The particulate fractions for all filtered samples are shown in Tables 4.12 and 4.13 for the waste collection and floor drain systems, respectively. Tables 4.7 to 4.9 show the DFs for the particulate and dissolved fractions where inlet and outlet samples were taken across specific demineralizers.

The particulate fractions listed for the floor drain system in Table 4.3 have a wide range for all radionuclides and the fraction changes from tank to tank (i.e., from the floor drain tank to the waste neutralizer tank) in the process stream. For ^{131}I which is normally considered a soluble radionuclide, a range of 1.7-90% particulate is shown for all floor drain system tanks. This is not characteristic radioiodine behavior and may be due to concentration on resin beads that were present in most samples of the floor drain collection tank, the waste neutralizer feed tank, and the waste collection tank. The high particulate fractions listed for the normally soluble radiocesiums, and ^{24}Na in these tanks may also be due to the concentration of these radionuclides on resin beads or resin fines. There is some assurance that these data are valid as the sum of the particulate and dissolved fractions agreed with the grab sample data as indicated in Appendix Table B.4-11.

The range of the particulate fractions for $^{134,137}Cs$ in the floor drain system was 2.9-65% with approximately half of the samples being less than 10% particulate. These data indicate that a major portion of the radiocesium activity was soluble. This is in contrast to the crud associated

TABLE 4.12

PERCENT OF RADIONUCLIDE ACTIVITY FOUND IN PARTICULATE FORM FOR THE WASTE COLLECTION SYSTEM

Nuclide	Radwaste Collection Tank 4/7/82	Radwaste Collection Tank 11/11/82	Radwaste Collection Filter Effluent 4/7/82	Radwaste Collection Filter Effluent 11/11/82	Radwaste Demineralizer Effluent 4/7/82
^{131}I	98[b]	<14	a	a	a
^{132}I	85[b]	a	a	a	a
^{133}I	94[b]	a	a	a	a
^{135}I	92[b]	a	a	a	a
^{134}Cs	95[b]	6.4[b]	8.5	<10	a
^{137}Cs	96[b]	6.0	8.4[b]	<5.0	<28
^{24}Na	80[b]	<0.2	>9.1	<1.5	< 3.2
^{51}Cr	99[b]	56[b]	~100[c]	>11	<26
^{54}Mn	94[b]	90[b]	>50	72[b]	<50
^{59}Fe	98[b]	~100[c]	> 9.1	>12	a
^{58}Co	99[b]	70[b]	> 9.1	>23[b]	a
^{60}Co	99	71[b]	>60	>82[b]	>52
^{65}Zn	~100[c]	~100[c]	>23	a	a
^{91}Sr	>97	a	a	a	a
^{110m}Ag	~100[b]	>77[b]	a	a	a
^{139}Ba	~100[b]	a	a	a	a
^{140}Ba	97[b]	c	a	a	a
^{140}La	~100[b]	32[b]	a	a	a

TABLE 4.12 (CONT)

PERCENT OF RADIONUCLIDE ACTIVITY FOUND IN PARTICULATE FORM FOR THE WASTE COLLECTION SYSTEM

Energy	Radwaste Demineralizer Effluent 5/27/82	Radwaste Sample Tank B 4/7/82	Radwaste Sample Tank A 10/22/82	Radwaste Sample Tank A 10/25/82	Radwaste Sample Tank A 11/11/82
^{131}I	<28	a	a	>11	a
^{133}I	a	a	a	>28	a
^{134}Cs	a	a	>35	a	a
^{137}Cs	a	a	>50	<1.1(-1)[b]	a
^{51}Cr	~100[c]	a	>48	a	a
^{54}Mn	a	73	82	>47	>55
^{59}Fe	a	a	>52[c]	a	a
^{58}Co	a	a	>70	>68	> 9.5
^{60}Co	<83	a	88	42[b]	>56
^{65}Zn	a	a	>38[b]	a	a
^{110m}Ag	a	a	>84	a	a
^{140}La	a	a	>41	>13	a
^{141}Ce	43[b]	a	a	a	a

a. Value not measured.

b. Use with caution results in grab and filtered samples were not consistent.

c. Radionuclide not detected in either dissolved or particulate fraction.

TABLE 4.13

RELATIVE CHANGES IN PARTICULATE FRACTION ACROSS REGENERANT NEUTRALIZATION DEMINERALIZER BEDS

Radionuclide	Ratio of Particulate Fraction in Inlet to Particulate Fraction in Outlet			
	Tanks D - B 5/19/82	Tanks C - A 5/24/82	Tanks D - B 5/26/82	Tanks D - 5/27/82
^{131}I	5.6	5.4(-1)	6.1(-1)	9.7(-1)
^{134}Cs	1.1	1.5	1.2(-1)	4.3(-1)
^{137}Cs	9.1(-1)	1.5	1.1(-1)	4.0(-1)
^{51}Cr	1.5	1.0	1.0	1.04
^{54}Mn	3.0	1.05	8.4(-1)	6.3(-1)
^{59}Fe	>1.3	1.01	9.8(-1)	1.0
^{58}Co	3.1	1.30	6.5(-1)	1.2
^{60}Co	2.4	1.0	6.3(-1)	4.3(-1)
^{110m}Ag	---	---	9.9(-1)	>1.1
^{140}Ba	2.8	---	1.4	---
^{140}La	1.1	1.2	1.1	1.1
^{141}Ce	7.5(-1)	7.1(-1)	1.0	>3.7(-1)

radionuclides ^{51}Cr, ^{54}Mn, $^{58,60}Co$, which were primarily particulate as would be expected. However, significant changes in particulate fractions were observed for all radionuclides from tank to tank in the same processing stream for successive samples. Table 4.13 shows the change in particulate fractions from the inlet to the outlet of regenerant vessel DD when concurrent samples were taken and filtered. Values greater than one indicate a relative decrease in the particulate fraction at the outlet whereas values less than 1 indicate an increase in the particulate fraction at the DD outlet. It should be noted that changes in radionuclide concentration are not reflected by the table, only changes in particulate fractions. It is clear from the data that two types of operation were occurring. The May 19, 1982, and May 24, 1982, samples have values greater than 1 indicating relative decreases in the particulate fraction in the effluent. The DF data for both periods indicate DFs close to 1 for all radionuclides. These data indicate that the demineralizer was functioning only as a filter. In contrast, the May 26, 1982, and May 27, 1982, sample data listed in Table 4.13 are principally less than 1 which indicates an increase in the relative particulate fraction measured indicating ionic behavior. The DFs for these periods were much higher (i.e., ~100) indicating effective ionic demineralization. There are some interesting anomalies such as the ^{51}Cr and ^{59}Fe data where the particulate fraction did not change. DFs for these radionuclides were on the order of 10. These data indicate that the resin beds may function either as a filter or as a combination filter and demineralizer.

The particulate radionuclide data listed in Table 4.14 for the waste collection system show similar behavior to that discussed for the floor drain system. Wide ranges in the particulate fractions for specific radionuclides were observed, as stated, for the floor drain system changes in the percent particulate ranged between 0.13 and 16. In this system the crud associated radionuclides appear to be almost entirely associated with the particulate fraction (~90%) in contrast to the floor drain system where a larger fraction was associated with the soluble portion.

For the April 7, 1982, sample, the relative changes in particulate concentration were greater than 1, indicating an increase in particulate fraction and therefore, effective demineralization. The most effective reductions in particulate fraction were for the ionic radionuclides ^{131}I, $^{134,137}Cs$, and ^{24}Na. These data may indicate that even the particulate fraction of ionic radionuclides may be retained by a DD. The particulate radionuclides indicate changes closer to 1 and thereby no change in particulate fraction. The remaining two samples, the November 11, 1982, waste collection FD sample and the April 7, 1982, waste collection DD sample, indicate values close to or less than 1. These data indicate that the FD and the DD were functioning as filters with a reduction in particulate fraction. It may be noted that increases in the particulate fraction of the soluble radionuclides were observed, possibly again due to ion exchange. The DF for particulate and dissolved fractions of

TABLE 4.14

RELATIVE CHANGES IN PARTICULATE FRACTION ACROSS WASTE COLLECTION SYSTEM DEMINERALIZERS

Radionuclide	Ratio of Particulate Fraction in Inlet to Particulate Fraction in Outlet		
	Waste Collection Filter 4/7/82	Waste Collection Filter 11/11/82	Waste Demineralizer 4/7/82
^{131}I	7.0	---	---
^{134}Cs	14.8	<6.4(-1)	---
^{137}Cs	16.0	1.2(0)	<3.0(-1)
^{24}Na	<8.8	<1.3(-1)	>2.8
^{51}Cr	1.8	<5.1	>3.8
^{54}Mn	1.0	1.2	1.0
^{59}Fe	9.8(-1)	<8.3	---
^{58}Co	1.4	3.0	---
^{60}Co	1.4	8.7(-1)	>1.1

individual inlet and outlet samples were also calculated. Table 4.7 lists the percent particulate and the DF for both the particulate and dissolved radionuclide fractions for the regenerant vessel DD samples. As previously discussed, during the period over which these samples were taken, the DD resin was changed (May 22, 1982); and therefore, an evaluation of a DD at different stages of depletion could be done. The May 26, 1982, sample data which indicate DFs that are most representative of a new DD bed (i.e., greater than 100) had DFs for the dissolved radionuclides which were significantly better than those for the particulate fractions. The following day (May 27, 1982) measurements were made on the same DD bed. The principal observations that may be made are that the DF for the dissolved radionuclide fractions had in most cases dropped a factor of 2 to 3, whereas the DF for the particulate fraction had increased by a similar amount over the period of a day. The result, therefore, is that the total radionuclide DFs remained approximately the same. The method of decontamination had apparently changed from ionic demineralization for the May 26, 1982, sample to particulate loading on the resin bed by May 27, 1982. These data indicate that the demineralization capability of the regenerant vessel DD was quickly reduced after it was placed in operation and it soon began to function as a filter. The May 19, 1982, sample was representative of a depleted DD bed for the DFs were in most cases ~1 for both the particulate and dissolved fractions. These data indicate that after some period of time particulate breakthrough occurs and the demineralizer ceases to function effectively.

In comparison with the regenerant vessel DD behavior, the waste collection FD demonstrated much higher DFs. As noted previously, this FD had been in operation for only a few days when the April 7, 1982, sample was taken, and from Table 4.8 it is apparent that the particulate DFs for the waste collection FD were excellent (100-1000) and the dissolved fraction DFs were somewhat less (10-100) This behavior for dissolved radionuclides is similar to that noted on May 26, 1982, in the regenerant vessel DD for a newly installed resin bed probably using depleted condensate demineralizer resin. The high particulate DFs indicate that the design of the FD makes it much more efficient for particulate removal than for ionic radionuclides. This is further confirmed by the November 11, 1982, sample data which shows DFs of ~100 for particulates with lower DFs for the dissolved fraction.

5. SPENT FUEL POOL CLEANUP SYSTEM

5.1 System Description and Sample Points

Spent fuel pools are used to store spent fuel rods after removal from the reactor. At Brunswick there is a separate spent fuel pool (SFP) for each of the two reactors. Each fuel pool's water is processed by passing a sidestream of water through: (1) a skimmer surge tank, (2) a heat exchanger and (3) one of two fuel pool filter/demineralizers (FDs). The water is normally routed back to the SFP but can be routed to a condensate storage tank (CST) if the fuel pool water level threatens to exceed the allowable upper limit, as may occur during refueling. The fuel pool FDs are sometimes used to process water from other systems, such as the torus, if they have no cleanup system or their systems are temporarily inoperable. A diagram of the SFP cleanup system is shown in Figure 5-1.

The FDs are constructed of screens coated with special powdered resins (i.e., resins prepared with a wide range of particle sizes to improve their effectiveness for filtering particulates.) They are used to control both the chemistry and the radioactivity of the SFP. To recondition the FDs, the resin is removed by "backwashing" and new resin applied by "precoating." These procedures are accomplished using water flow, so no physical access to the screens is required.

Sample points used during these measurements are shown in Figure 5-1. Outlets of sampling lines from these points are located in the radwaste building sample sink. Duplicate samples taken from the Unit No. 2 system during the first sample period demonstrated the reproducibility of the samples. On two occasions when the FDs were not in operation, "dip samples" were taken directly from the SFPs. These samples contained radionuclide concentrations consistent with those in samples taken from FD inlet sample lines in the radwaste sample sink.

5.2 Discussion of Measurement Data

Much more extensive measurements were made of the Unit No. 2 SFP cleanup system than of the Unit No. 1 system. The two systems were constructed to be equivalent, and the first measurements gave very nearly the same decontamination factors (DFs) for the two systems. The SFP of Unit No. 2 was chosen for extensive study because that reactor was scheduled for refueling during the measurement period. Therefore, concentrations in the fuel pool and DFs of the cleanup system for many radionuclides could be studied, whereas only a few long-lived radionuclides could be studied in the Unit No. 1 system.

Radionuclide concentrations measured at the inlet and outlets of the FDs are presented in Appendix Tables B.5-1 through B.5-4. These data are summarized in Table 5.1. Concentrations of ^{60}Co, ^{131}I and ^{134}Cs over the measurement period are plotted in Figure 5-2. The radionuclide concentrations were relatively constant prior to refueling, increased rapidly

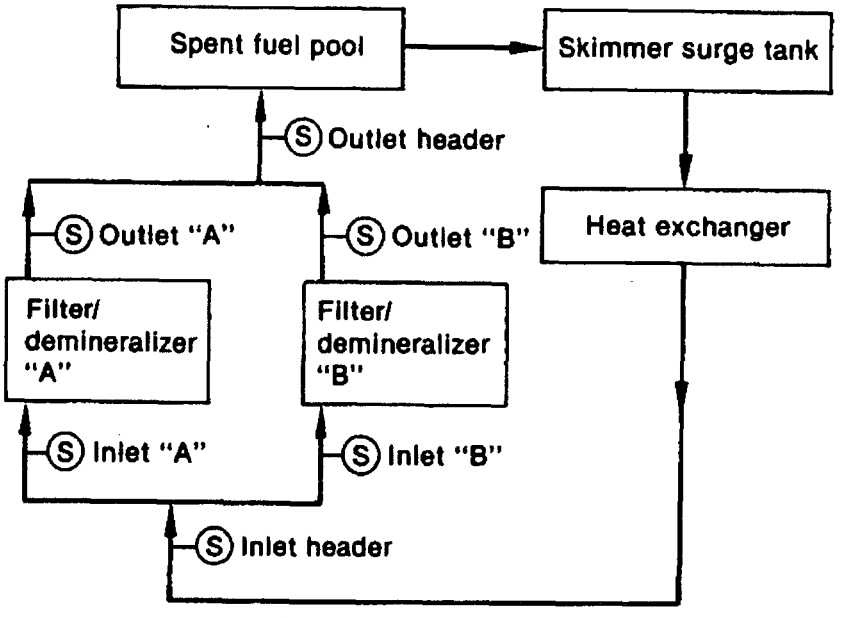


Figure 5-1. Spent Fuel Pool System and Sample Points

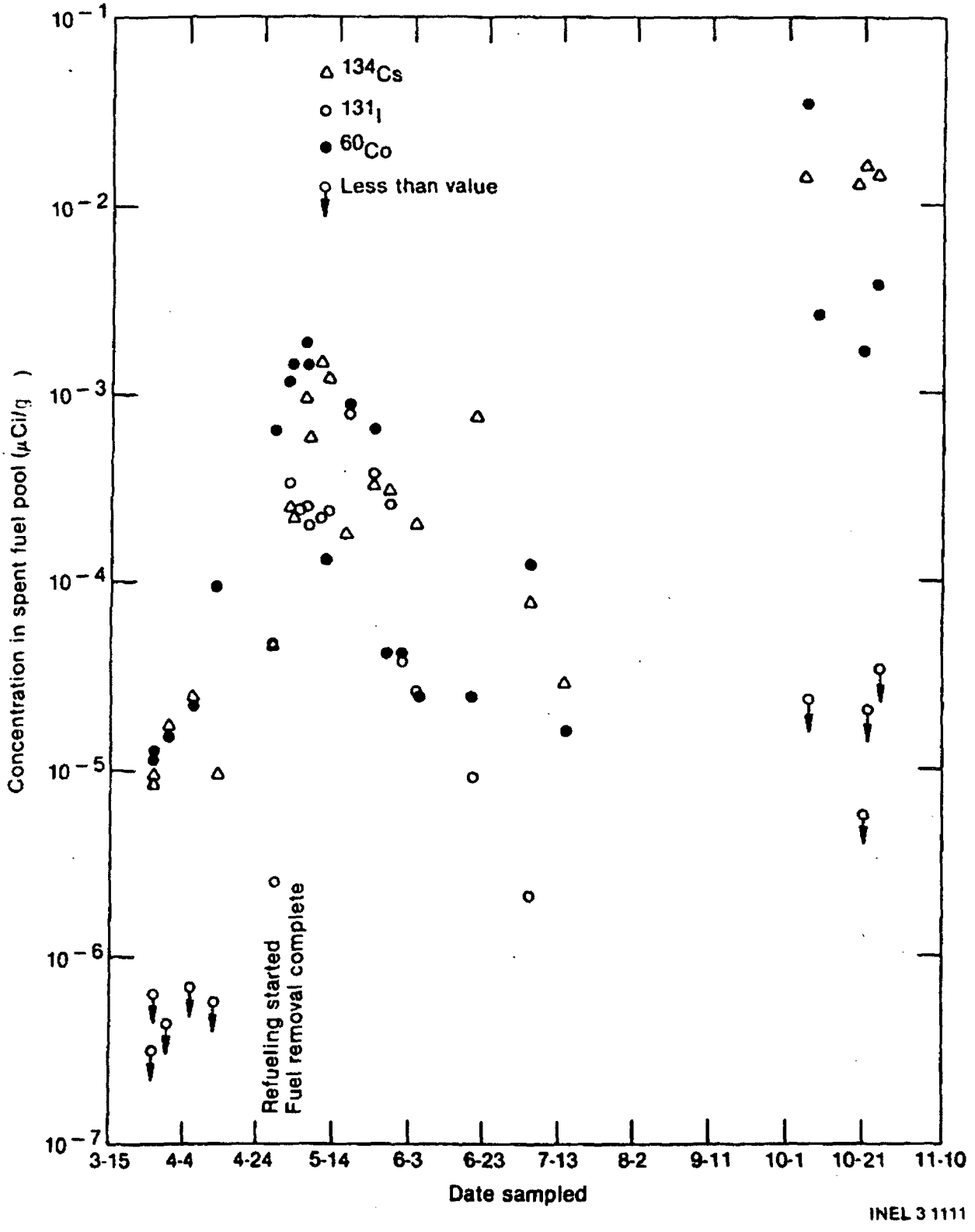


Figure 5-2. Concentrations of ^{134}Cs, ^{131}I, and ^{60}Co in Unit No. 2 SFP

TABLE 5.1
MEANS AND RANGES OF RADIONUCLIDE CONCENTRATIONS IN THE
INLET AND OUTLET OF THE UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZERS
(microcuries/gram)

	Inlet		Outlet	
Nuclide	Mean[a] (μCi/g)	Range (μCi/g)	Mean[a] (μCi/g)	Range (μCi/g)
^{131}I	2.9 ± 0.6(-4)	<3(-7) - 8.03(-4)	1.8 ± 0.5(-4)	<2(-7) - 6.51(-4)
^{132}I	1.1 ± 0.2(-4)	<5(-7) - 4.99(-4)	2.7 ± 0.2(-5)	<2(-7) - 3.06(-5)
^{134}Cs	5 ± 1 (-4)	8.4 (-6) - 1.58(-2)	2.7 ± 0.6(-4)	<7(-7) - 1.58(-3)
^{136}Cs	1.1 ± 0.1(-4)	<4(-7) - 1.61(-4)	4.4 ± 0.8(-5)	<3(-7) - 1.80(-4)
^{137}Cs	6 ± 2 (-4)	2.00(-5) - 2.08(-2)	3.1 ± 0.9(-4)	8.3(-6) - 1.98(-3)
^{51}Cr	1.0 ± 0.1(-4)	<2(-6) - 2.00(-4)	4.1 ± 0.5(-6)	<6(-7) - 5(-6)
^{54}Mn	3.9 ± 0.5(-4)	4(-7) - 7.05(-4)	1.5 ± 0.3(-4)	<2(-7) - 5.29(-4)
^{59}Fe	8.0 ± 0.8(-5)	<5(-7) - 1.09(-4)	2.1 ± 0.3(-6)	<2(-7) - 4.0 (-6)
^{58}Co	2.0 ± 0.2(-4)	<4(-7) - 3.42(-4)	1.1 ± 0.2(-4)	1.6(-7) - 2.47(-4)
^{60}Co	7 ± 1 (-4)	9.2 (-5) - 3.34(-2)	4.9 ± 0.9(-4)	2.0(-6) - 1.22(-3)
^{65}Zn	7.0 ± 0.9(-5)	<4(-7) - 3.5 (-4)	3.7 ± 0.5(-5)	<2(-7) - 1.07(-4)
^{95}Zr	2.3 ± 0.4(-6)	<3(-7) - 4.9 (-6)	7 ± 1 (-7)	<2(-7) - 1.7 (-6)
^{95}Nb	5.0 ± 0.4(-6)	<2(-7) - 6(-6)	4.0 ± 0.2(-6)	1.7(-7) - 4.3 (-6)
^{99m}Tc	3.3 ± 0.6(-4)	<2(-7) - 8(-4)	7 ± 5 (-6)	<2(-7) - 4(-5)
^{103}Ru	5.0 ± 0.6(-6)	<3(-7) - 8.2(-6)	6 ± 2 (-7)	<2(-7) - 3(-7)
^{124}Sb	1.1 ± 0.1(-6)	2(-7) - 1.5(-6)	2.5 ± 0.1(-7)	<1(-7) - 3(-7)
^{132}Te	2.0 ± 0.2(-6)	<2(-7) - 2.8(-6)	1.1 ± 0.2(-6)	<1(-7) - 3(-6)
^{140}Ba	2.8 ± 0.2(-5)	<2(-7) - 3.7(-5)	9.0 ± 0.9(-6)	<2(-7) - 1.3(-5)
^{141}Ce	2.3 ± 0.3(-6)	1.8 (-7) - 3.3(-6)	4.3 ± 0.7(-7)	<2(-7) - <2(-6)
^{239}Np	5.4 ± 0.4(-5)	<5(-7) - 8.3(-5)	7.5 ± 0.6(-5)	<2(-7) - 9.3(-5)

a. For period from 3/27/83 through 7/5/83. Real values only.

during refueling, and decreased somewhat erratically over the two months immediately after refueling. Concentrations of long-lived radionuclides in the Unit No. 2 SFP during the measurement period six months after the shutdown for refueling were as much as three orders of magnitude higher than they were two months after refueling, apparently because of infrequent operation of the FDs during the intervening period combined with continued release of radionuclides from the interiors and/or surfaces of the fuel elements. The lack of short-lived radionuclides in the later measurement period implies that the source of activity was probably the fuel elements stored in the SFP.

Duplicate samples were taken approximately a fourth of the time. One was counted as a grab sample and the other was filtered through a 0.45 μm filter to determine the "soluble" (dissolved and less than 0.45 μm particles) and "particulate" (greater than 0.45 μm particles) fraction of the radionuclides. The data from these samples are presented in Appendix Tables B.5-5 through B.5-7. The sum of the soluble (filtrate) and particulate (filter) activities should equal the activity of the grab sample for each radionuclide, since the samples were taken at approximately the same time. However, except for the iodine and cesium isotopes (dissolved activity), the sum of the filtrate and filter activites was significantly less than the activity of the grab samples for most pairs of samples, indicating a problem somewhere.

From 90 to 100% of the iodine and cesium activities were contained in the sample filtrate, which indicates a high probability that the soluble parts of the filtered samples were successfully collected and counted. Table 5.2 shows the soluble fractions in the SFP FD inlet and outlets determined by dividing concentration in the filtrate by the concentration in the grab sample. Values are included only for radionuclides for which three values of concentrations in the filtrate were measured. These measurements show that the iodine and cesium isotopes were primarily soluble, whereas the crud-associated radionuclides were more than 50% particulate. However, an accurate determination of the fraction was complicated by problems in the analysis procedures for filtering (i.e., for the crud-associated radionuclides the sum of the concentrations in the soluble and particulate fractions did not equal the concentration in the grab sample).

The instantaneous DFs for the FDs are presented in Appendix Table B.5-8, and these data are summarized in Table 5.3. The measured DFs vary by as much as a factor of 8 for the iodines and cesiums and a factor of 50 for some of the crud-associated isotopes. For iodine and cesium isotopes DFs were 7 to 8 immediately after the FDs were precoated, and decreased with time-in-service thereafter. During the period of high concentrations, (i.e., within two to three weeks after the start of refueling) the DFs for cesium decreased to 2 to 4 within twelve hours or less, and to 1 within a few days. The DF for ^{131}I also decreased with time-in-service, but at a slower rate. The DFs for the crud-associated radionuclides were also generally highest immediately after precoats, but the dependence of their DFs on time-in-service of the FDs was not as pronounced or consistent as

TABLE 5.2
AVERAGE SOLUBLE FRACTIONS OF RADIONUCLIDES
IN THE UNIT NO. 2 SFP CLEANUP SYSTEM

	Soluble Fraction (percent)		
Nuclide	Inlet	F/D Outlet "A"	F/D Outlet "B"
^{131}I	96 ± 4	99 ± 2	104 ± 4
^{134}Cs	92 ± 4	90 ± 4	100 ± 4
^{136}Cs	89 ± 5	87 ± 3	90 ± 10
^{137}Cs	90 ± 4	92 ± 3	103 ± 3
^{51}Cr	11 ± 3	a	a
^{54}Mn	45 ± 7	56 ± 13	51 ± 6
^{59}Fe	11 ± 3	a	a
^{58}Co	43 ± 8	40 ± 10	49 ± 5
^{60}Co	42 ± 5	47 ± 8	44 ± 7
^{65}Zn	30 ± 3	37 ± 8	34 ± 3
^{99}Tc	70 ± 10	a	a

a. Fewer than three real values available for average.

TABLE 5.3
SUMMARY OF UNIT NO. 2 SPENT FUEL POOL
FILTER/DEMINERALIZER DECONTAMINATION FACTORS

Nuclide	Minimum Real DF[a]	Maximum Real DF[a]	Median of Real DFs
^{131}I	1.06 ± 0.02 (0)	7.9 ± 0.1 (0)	3.7
^{132}I	1.76 ± 0.06 (0)	5 ± 1 (0)	3.2
^{134}Cs	9.0 ± 0.2 (-1)	7.6 ± 0.3 (0)	2.4
^{136}Cs	8.9 ± 0.4 (-1)	7.5 ± 0.3 (0)	3.0
^{137}Cs	9.1 ± 0.2 (-1)	7.9 ± 0.1 (0)	2.4
^{51}Cr	3 ± 2 (0)	1.3 ± 0.3 (1)	8.0
^{54}Mn	1.09 ± 0.03 (0)	4.3 ± 0.3 (1)	2.3
^{59}Fe	2.0 ± 0.2 (1)	1.20 ± 0.3 (2)	4.3
^{58}Co	1.07 ± 0.02 (0)	4.6 ± 0.4 (1)	3.9
^{60}Co	1.12 ± 0.03 (0)	5.6 ± 0.3 (1)	3.8
^{65}Zn	1.06 ± 0.03 (0)	3 ± 2 (1)	4.1
^{95}Zr	b	b	4.3[c]
^{95}Nb	0.6 ± 0.1 (0)	0.6 ± 0.1 (0)	0.6
^{99m}Tc	2 ± 1 (0)	4.9 ± 0.5 (1)	23.0
^{103}Ru	1.1 ± 0.8 (1)	1.1 ± 0.8 (1)	11.0
^{124}Sb	2 ± 1 (0)	5 ± 2 (0)	3.5
^{132}Te	9 ± 4 (-1)	2.2 ± 0.9 (0)	1.5
^{140}Ba	1.9 ± 0.6 (0)	6 ± 3 (0)	2.5
^{141}Ce	b	b	2.9[c]
^{239}Np	8.9 ± 0.4 (-1)	3 ± 1 (0)	1.4

a. Real DFs are calculated without using less-than or greater-than concentrations.

b. No real DFs.

c. Average of real and greater-than values. This value is given as a conservative estimate of the DF for nuclides for which the number of greater-than DFs is at least twice the number of real DFs.

it was for the iodines and cesiums. Cleanup capability of the SFP filter demineralizers was sufficient to control the radioactivity content of the SFP water during refueling.

To maintain their operability, the FDs were precoated frequently during and for several weeks after refueling. The operation of the FDs was somewhat erratic during the measurement periods because of automatic trips caused by conditions such as low fuel pool water levels or low flow through the FDs. The low flow problem appeared to be due to difficulties in obtaining ideal coating during the precoat operations. When trips on low flow occurred, the FDs were usually backwashed and precoated. A list of precoats is shown in Appendix Table B.5-9. The frequent precoating resulted in much higher average DFs for the iodine and cesium isotopes than would have been observed with operation for longer periods between precoats. The DFs for crud-assocated isotopes were less affected by the precoatings.

6.0 VENTILATION SYSTEM

6.1 System Description and Sample Points

There are five gaseous environmental release points from the plant - main stack, two reactor buildings, and two turbine buildings. The two reactor building release points have no cleanup prior to release; the turbine building vents have HEPA filter and charcoal treatment prior to release; and the main stack vent has HEPA filter treatment prior to release. At the time of the in-plant measurements, the steam jet air ejectors from both units passed through a thirty-minute delay line prior to entering the main stack filters. The augmented off-gas system was inoperable in both units during the measurement period. Figure 6-1 shows a schematic of the ventilation and off-gas systems at the two plants.

Air flow rate past each sample point was determined by helium dilution and pitot tube measurements. Flows determined by these two methods were compared to the present plant flow indicators and correction factors determined for the plant flow indicators. These flow rates and correction factors are listed in Table 6.1. Thereafter, plant flow rates for each sample period were used and the appropriate correction factor applied. In the case of the main stack and radwaste vent no correction factor was used.

Continuous measurements were made for ^{14}C and ^{3}H. Sampler and analysis techniques used for these measurements are detailed in Reference 8. Carbon and tritium are collected on molecular sieve and silica gel absorption beds respectively. To determine oxidized and nonoxidized fractions, the air stream is partitioned after the initial silica gel. One portion is passed through a hot Pt-Pd catalist, a further silica gel bed and a molecular sieve; while the second portion is passed through a molecular sieve.

Continuous sampling of radioiodines and particulates was performed. A HEPA filter was used to collect particulates and different absorption media to selectively collect I_2, hypoiodous acid (HOI), and organic iodine as described in Reference 8. Selected plant iodine charcoal cartridges were also counted by the plant and EG&G personnel for cross comparison. Results are listed in Appendix Table A.1.

Noble gases were collected from the plant steam jet air ejectors. Selected grab samples from the main stack were counted by the plant and EG&G personnel to cross compare sample results. Results of the noble gas comparison are shown in Appendix Table A.1. Steam jet air ejector noble gas release data shown in Appendix Tables B.6-1 and B.6-2 were obtained from plant records for 1976-1982.

6.1.1 Reactor Building Ventilation

A schematic drawing of the reactor building ventilation system is shown in Figure 6-2. The ventilation systems for Unit No. 1 and No. 2 are identical. Iodine species, particulate, ^{14}C and ^{3}H measurements were made upstream from the release point for both Units No. 1 and No. 2.

TABLE 6.1

VENTILATION FLOW RATES AND PLANT TOTALIZERS CORRECTION FACTORS MEASURED 3/8/82-3/15/82

	EG&G Determined Flow Rate cc/s	Correction Factor[a]
U-1 Reactor Building	3.3(7) (70,000 cfm)	.83
U-2 Reactor Building	2.3(7) (49,000 cfm)	.86
U-1 Turbine Building	7.2(6) (15,000 cfm)	.90
U-2 Turbine Building	7.2(6) (15,000 cfm)	.98
Radwaste Vent To Main Stack	1.5(7) (32,000 cfm)	b
Main Stack	3.1(7) (67,000 cfm)	c

a. These correction factors were applied to plant flow indicators to determine the correct flow rates.

b. No plant flow indicator for this system.

c. No helium measurements could be made for this release point

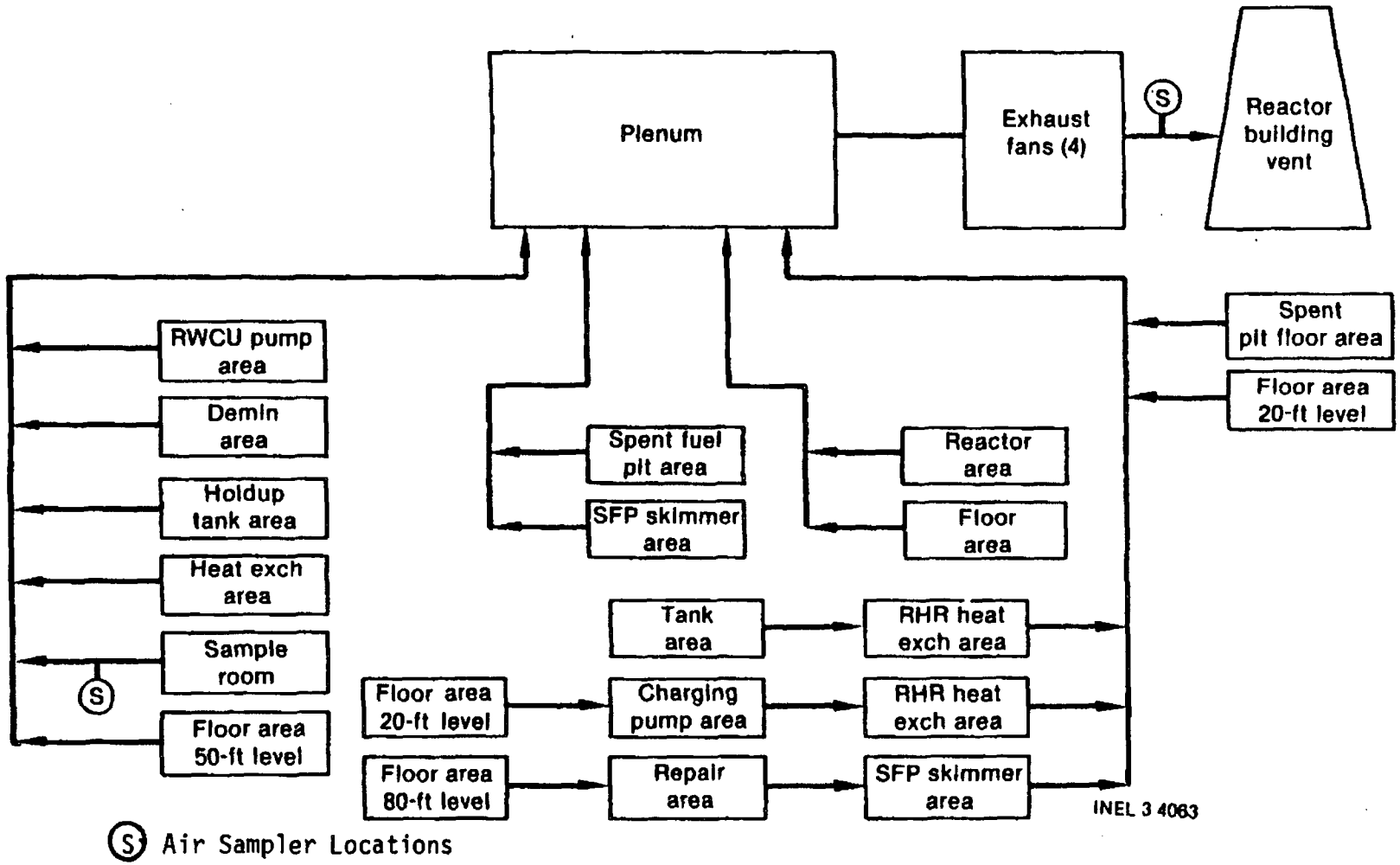


Figure 6-1. Reactor Building Ventilation System

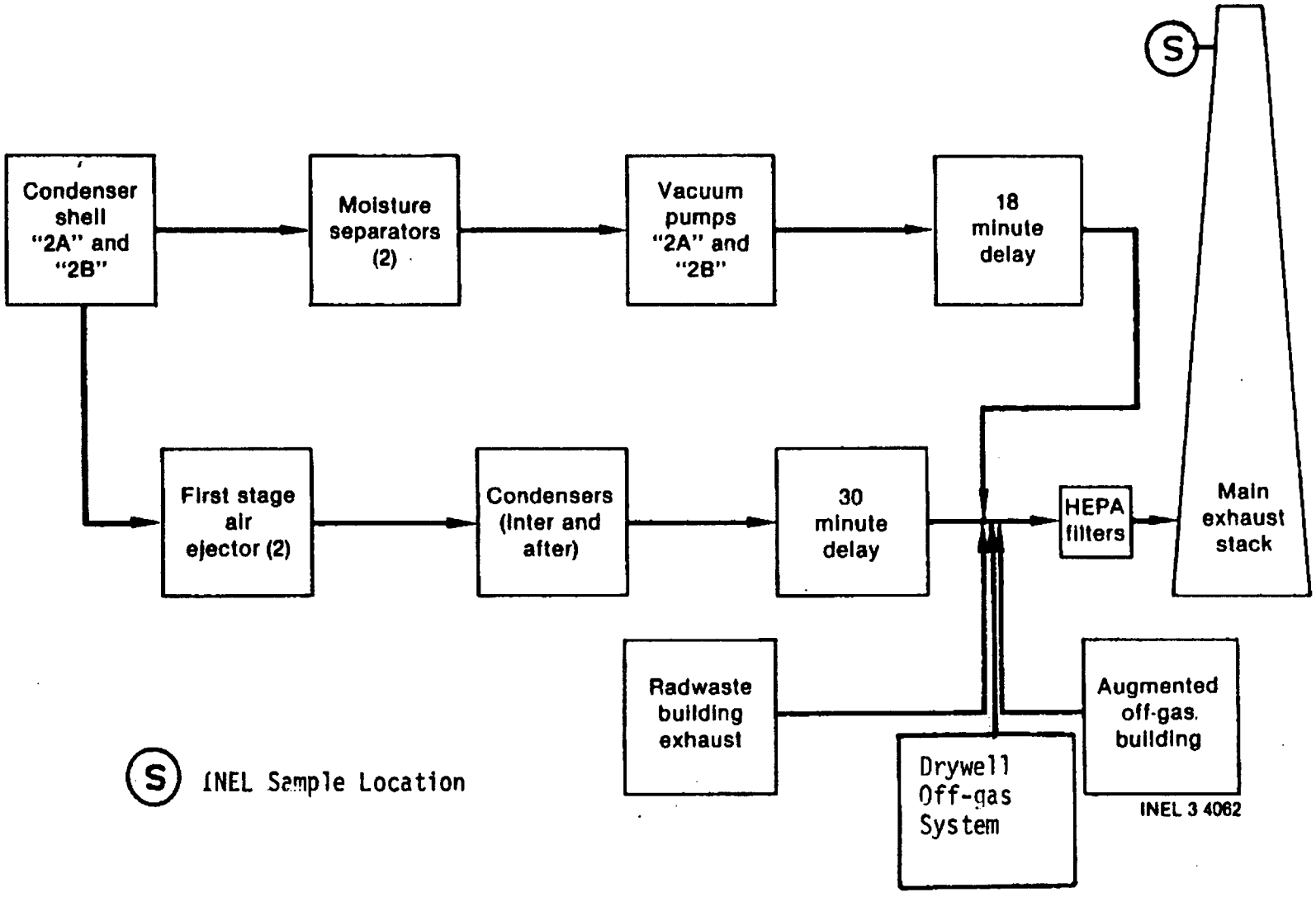


Figure 6-2. Main Stack Exhaust

Iodine species and particulate samples were also taken from the Unit No. 2 sample sink hood exhaust to determine if the continuous flow of coolant water presented a significant release of activity.

The reactor building ventilation system has four exhaust fans, two supply fans, and dampers which are adjusted to maintain a negative pressure to the atmosphere. Design exhaust flow is 130,000 cfm and 140,000 cfm with three and four exhaust fans operationing, respectively. Flow measurements with three exhaust fans, two supply fans, and an unknown damper alignment indicated a flow of approximately 60,000 cfm. With four exhaust fans the measured flow was approximately 75,000 cfm.

6.1.2 Turbine Building Ventilation

The turbine building is common to Unit No. 1 and No. 2. There are two exhausts from the turbine building with a design flow of 15,000 cfm each. There is some division of the air from components of the two units with the exhaust air being taken from selected areas of the respective units. An internal circulation system moves 230,000 cfm of building air causing mixing of the Unit No. 1 and No. 2 activities.

There are two exhaust air cleanup systems, one for each unit. These cleanup systems consists of HEPA filters and 6,000 pounds of impregnated charcoal. Age of the charcoal and total volume of air processed by each filter could not be determined. Inlet and exhaust air were sampled for iodine species and particulates to determine the efficiency of the cleanup system. The turbine deck general area was also sampled for iodine species and particulates to determine differences between general area air concentrations and cleanup system inlets. Exhaust air was also sampled for ^{14}C and ^{3}H.

6.1.3 Main Stack Exhaust

The main stack receives off-gas from the steam jet air ejectors, gland seal exhausts, standby gas treatment and mechanical vacuum pumps from both units as well as the radwaste building. The unused augmented off-gas system building supplies dilution air prior to release (see Figure 6-3). The flow rate during normal operation is 67,000 cfm.

An EG&G iodine species and particulate sampling system could not be installed on the main stack release point; therefore, plant data for iodine and particulate releases were used. Samples were counted by CP&L and EG&G personnel to provide a comparison with the results shown in Appendix Table A.1. A ^{14}C and ^{3}H species sampler was installed two days prior to the refueling shutdown of Unit No. 2 and samples were taken until November 9, 1982.

The radwaste ventilation (Figure 6-4) was the only feed to the main stack which could be sampled for iodine species, particulates, ^{14}C and ^{3}H. The radwaste building is common to Units No. 1 and No. 2.

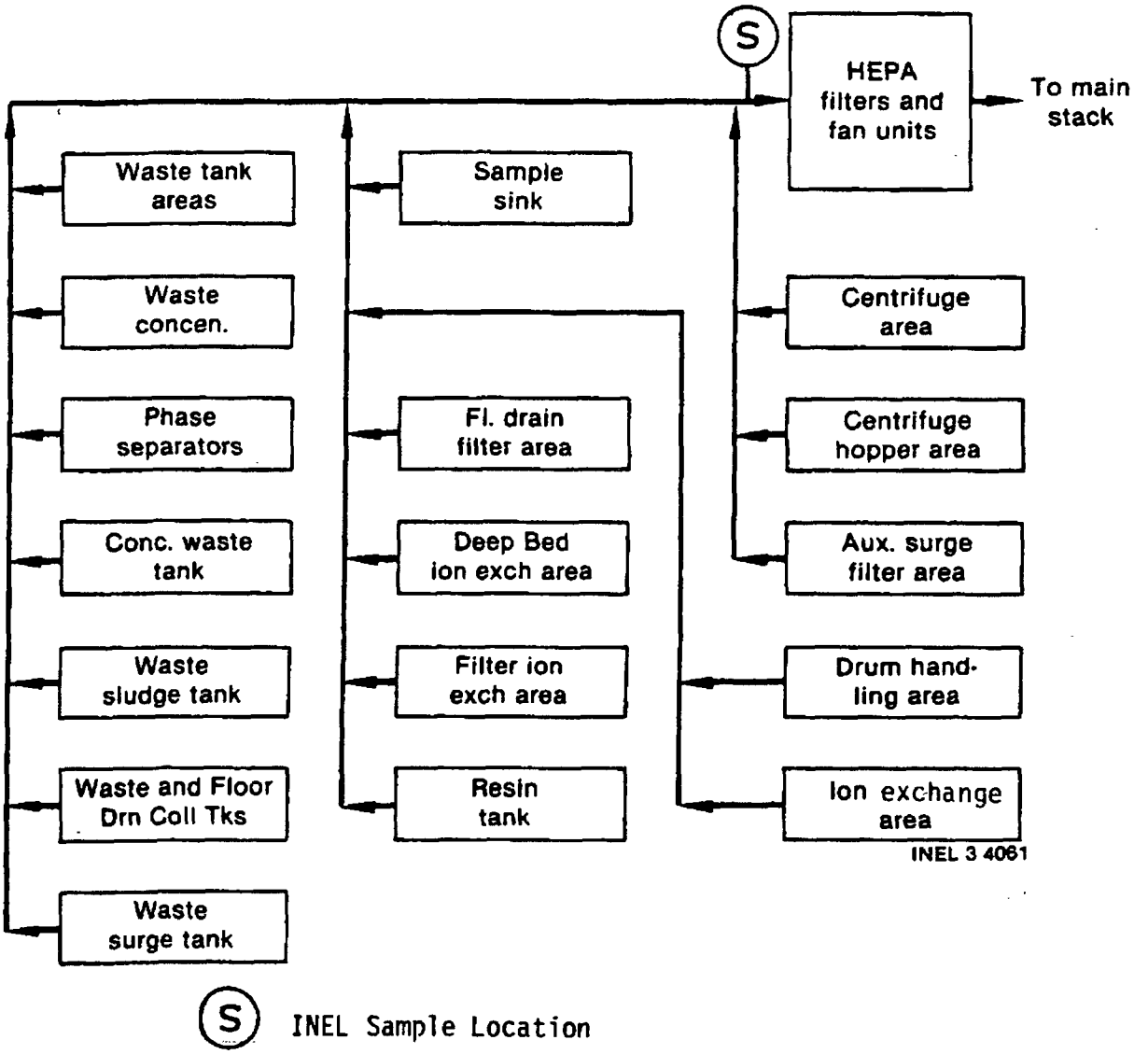


Figure 6-3. Radwaste Ventilation System

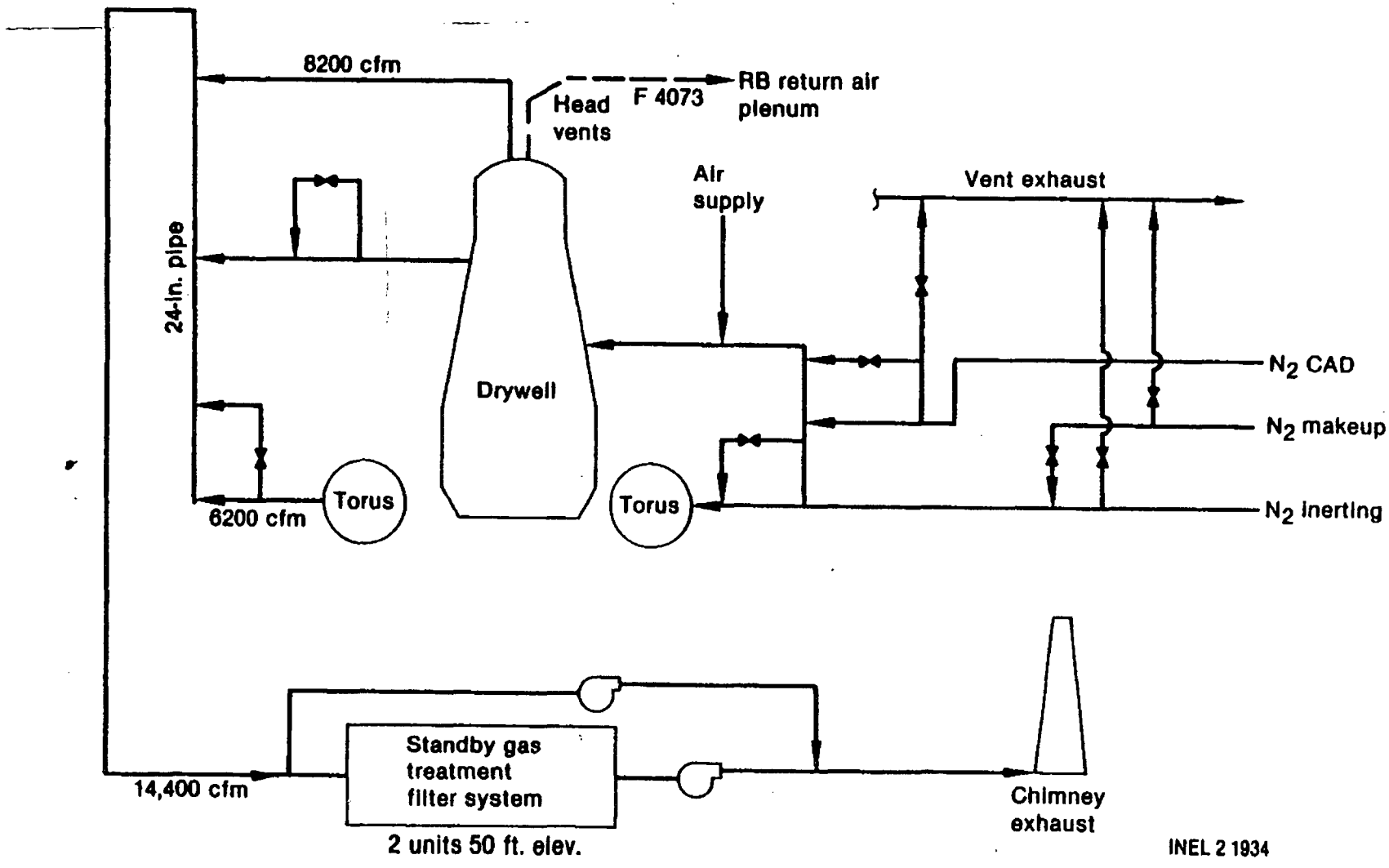


Figure 6-4. Drywell Off-gas and Nitrogen Inertion System

6.1.4 Drywell Purge Standby Gas Treatment System

Air from the drywell can bypass or be passed through the standby gas treatment system (SBGTS). The SBGTS consists of two HEPA-charcoal units identical to those in the turbine building exhaust treatment. During the initial purge of the Unit No. 2 drywell, iodine and particulates were sampled at the inlet and outlet of the SBGTS to determine its efficiency.

6.1.5 Reactor Vessel Iodine Species

After shutdown of Unit No. 2, a vent in the head was opened and air was drawn out of the vessel by a portable charcoal cleanup system, then released to the refueling floor area. This air was sampled to determine iodine species. The concentrations of iodine are not representative of the air in the vessel due to an unknown quantity of air flow through the vent.

6.2 Measurement Date and Analysis

6.2.1 Measurement Data

Table 6.2 lists the sampler locations, dates of the measurements, and sample types. The iodine and particulate release rates (μCi/s) are presented in Appendix Tables B.6-3 to B.6-9. Data for the main stack and other release data after November 17, 1982, are plant values and are presented in Table B.6-10. Iodine species data (in μCi/cc) are presented in Tables B.6-12 to B.6-18. When a total iodine sampler was used, no species data are available, only particulate and total iodine. A second charcoal bed was used for a break-through indicator. There are no data for the inlet to the turbine building cleanup systems or the radwaste building after November 17, 1982.

Iodine and particulate sample data taken for special systems are shown in Appendix Tables B.6-10 and B.6-19. These include the Unit No. 2 reactor sample sink, room air on the turbine deck, vessel atmosphere, and drywell purge gas treatment system inlet and outlet. Release data (in μCi/s) for ^{14}C and ^{3}H are presented in Appendix Tables B.6-20 and B.6-21. Noble gas instantaneous release rates for six nuclides from the steam jet air ejectors were obtained from the plant monthly grab samples. These data have been collected from 1976 to the present and are listed in Appendix Table B.6-1 and B.6-2.

6.2.2 Normalized Iodine Release Rates

A useful indicator of liquid system integrity is a normalized release rate (NRR). An NRR allows for comparison of air release rates, factoring out changes in reactor coolant concentration, so that liquid system leaks contained in the area ventilated by the measured air stream can be determined. These comparisons may be historical for an off-gas system,

TABLE 6.2

AIR SAMPLER OPERATION AND MEASUREMENT PERIODS

Location	Dates	Sampler Types[a]	Appendix Table No.
Unit 1			
Turbine Building Vent	3/14/82 - 1/31/83 3/14/82 - 11/17/82	P, IS C, H	B.6-3, B.6-12
Turbine Building Cleanup System Inlet	3/14/82 - 6/11/82	P, IS	B.6-4, B.6-13
Reactor Building	3/14/82 - 1/31/83 3/14/82 - 11/17/82	P, I C, H	B.6-7, B.6-17
Unit 2			
Turbine Building Vent	3/14/82 - 1/31/83 3/14/82 - 11/17/82	P, IS C, H	B.6-5, B.6-14
Turbine Building Cleanup System Inlet	3/14/82 - 1/31/83 3/14/82 - 11/17/82	P, IS C, H	B.6-6, B.6-15
Reactor Building	3/14/82 - 1/31/83 3/14/82 - 11/17/82	P, IS C, H	B.6-8, B.6-18
Sample Sink	3/14/82	P, IS	B.6-11
Main Stack	3/14/82 - 1/31/83 4/19/82 - 11/17/82	P, I C, H	B.6-10
Radwaste	3/14/82 - 11/17/82 3/15/82 - 7/15/82	P, IS C, H	B.6-9, B.6-16
Steam Jet Air Ejectors			
Unit 1	7/77 - 7/82	N	B.6-1
Unit 2	8/76 - 5/82	N	B.6-2

a. All data after 11/17/82 are plant data and iodine numbers are total.

b. P = Particulate
IS = Iodine Species
I = Total Iodine
C = ^{14}C
H = ^{3}H
N = Noble Gas (Plant Data)

between systems at a multi-unit site, or between similar units at different sites. An NRR allows for a better interpretation of air release rate results. An example is an increase in a reactor building vent release rate. The increase could be caused by greater liquid leakage at the same reactor coolant concentration, or no increased leakage but an increase in reactor coolant concentration.

Calculation of an NRR is performed using the measured air release rate and the reactor coolant concentration averaged over the concurrent air sampling period. Better results are obtained if reactor coolant spikes are not included in the average. Normally ^{131}I is used as the indicator radionuclide in the following equation.

$$NRR = \frac{C_o}{\bar{C}_R}$$

NRR = normalized release rate

C_o = air system release rate, μCi/s

$\bar{C}_R$ = concurrent averaged source liquid concentrations, μCi/g

An NRR can be calculated for the ventilation system of any area where radioactive liquids systems are contained or the liquids processed. The source for the turbine building is the steam system which can be represented by the reactor coolant concentration multiplied by the carryover fraction of iodine to the steam system.

Source liquid concentration, $\bar{C}_R$, is the time average concentration over the sample period. For radioiodine, a phenomenon called iodine spiking (i.e., where reactor coolant radioiodine concentration becomes elevated due to physical changes in the core) occurs following a reactor power level transient. To obtain a more accurate normalized gaseous release rate, an average radioactive coolant level, including spikes, was also determined. The results of using coolant spike activities to determine the NRR resulted in a decrease in leak rate. The decrease was not real but indicated that changes in coolant levels do not increase exhaust levels immediately, but are attenuated. This effect has been seen in PWRs in both the liquid and gas systems.[4,5]

6.3 Results and Discussion

6.3.1 Main Stack

The largest source of ^{131}I release to the atmosphere was from the main stack. Table 6.3 lists the release rates measured during the sampling periods. Figure 6-5 summarizes the ^{131}I measurements in the main stack.

TABLE 6.3

MAIN STACK ^{131}I RELEASE RATE

1982 Date	Release Rate μCi/s	1982 Date	Release Rate μCi/s
3/15-3/22	2.3(-2)		
3/23-3/29	1.9(-2)	9/28-10/4	6.3(-3)
3/30-4/5	1.5(-2)	10/5-10/11	1.7(-1)
4/6-4/12	1.7(-2)	10/12-10/18	1.7(-2)
4/13-4/19	1.7(-2)	10/18-10/25	1.9(-1)
4/20-4/26	3.3(-2)	10/26-11/1	1.5(-1)
4/27-5/3	2.5(-3)	11/1-11/8	7.9(-4)
5/4-5/10	8.6(-4)	11/9-11/15	5.1(-4)
5/11-5/17	2.8(-4)	11/15-11/23	2.1(-4)
5/18-5/24	2.5(-4)	11/23-11/29	3.2(-4)
5/24-5/31	2.3(-4)	11/30-12/6	3.1(-2)
6/1-6/7	1.8(-4)	12/7-12/13	2.3(-1)
6/8-6/14	1.5(-4)	12/14-12/20	1.2(-1)
6/15-6/21	1.4(-4)	12/21-12/27	1.3(-1)
6/22-6/28	1.4(-4)		
6/29-7/5	5.0(-5)		
7/6-7/12	9.9(-5)		
7/13-7/19	6.4(-5)		
7/20-7/26	5.5(-6)		

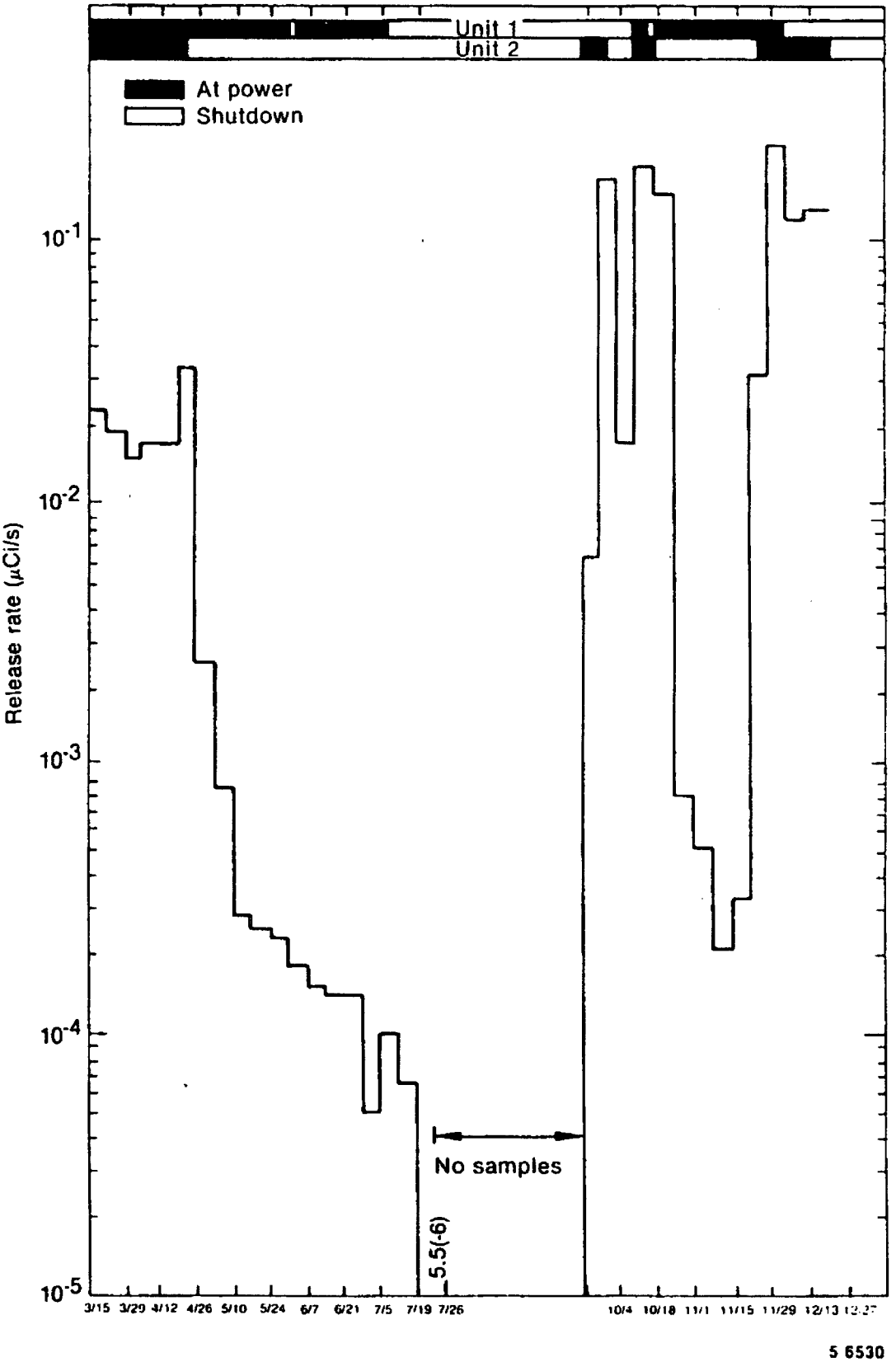


Figure 6-5. ^{131}I Release Rate In Brunswick Main Stack

Note that the operation of Unit No. 2 contributed most of the ^{131}I to the stack. During the period March 15 to April 22, 1982 when both units were operating, the average release rate was 1.8(-2) μCi/s. During the period June 7 to July 5, 1982, when only Unit No. 1 was operating, the average release rate was 1.2(-4) μCi/s. A similar pattern was evident between September 28 and December 27, 1982. During this period, release rates of ^{131}I from the main stack, when Unit No. 2 was operating, were 0.17 μCi/s. When Unit No. 1 was operating alone (and residual ^{131}I from Unit No. 2 was apparently not significant), the release rate from the main stack was 2.1(-4) μCi/s. The main reason for the ^{131}I release being dominated by Unit No. 2 operation is the fact that the reactor water concentration in Unit No. 2 was much higher than that in Unit No. 1. Tables 3.14 and 3.16 show that the ^{131}I concentration in reactor water was 300 times higher in Unit No. 2 than in Unit No. 1.

The largest single source of ^{131}I to the main stack was almost certainly the condenser off-gas. Table 6.4 shows a comparison of off-gas release rates measured at several BWRs. The table lists release rates, coolant concentrations and carryover fractions for ^{131}I at 5 BWRs.[19] Also listed are comparable values for Brunswick Unit No. 2 before and after refueling. Note that both NRRs and modified NRRs (see Table 6.4 for definition) in the Brunswick stack increased a factor of 10 during power operation after the shutdown. The most probable explanation for the increased release rate in the off-gas was that there was enhanced air inleakage to the condenser after the outage, as confirmed by discussion with plant personnel. However, the normalized off-gas rates before and after the outage tend to bracket those measured at other BWRs.

6.3.2 Reactor Building

Table 6.5 summarizes the measurements of ^{131}I release rate in the ventilation exhaust air from each reactor building. Figure 6-6 shows these values plotted as a function of time along with the power history for each plant. During periods of power operation, the ^{131}I release rates from the two reactor buildings were roughly proportional to the reactor water concentration of each reactor respectively. Release rates from Unit No. 2 reactor building were as high for a 30 day period after shutdown as they were during power operation. This may have been due to release from the fuel pool and/or the extensive maintenance work performance on the reactor water cleanup system during the outage.

Table 6.6 shows a comparison of ^{131}I release rates in reactor building ventilation exhaust air from both units at Brunswick and 4 other BWRs. Note that the NRR were similar for the two Brunswick units during power operation, and that they were higher than the other plants. The reason for the higher NRRs at Brunswick is not known. Samples of radioiodine were taken in the exhaust duct from the Unit No. 2 reactor water sample sink. It was thought that it might be a significant source, as the coolant water sample was on all the time. The average release rate of

TABLE 6.4

^{131}I RELEASE RATES IN OFF-GAS AT BWRS

Plant Number	Release Rate (μCi/s)	Average Coolant Conc. (μCi/g)	NRR[a] (μCi/s/μCi/g)	Carryover[b] Faction	Modified[c] NRR (μCi/s/μCi/g)
1	0.389	0.00390	99.7	0.023	4340
2	0.183	0.00577	31.7	0.0054	5870
3	0.0380	0.0345	1.1	0.0045	244[g]
4	0.0230	0.000620	37.1	0.010	3710
5	0.189	0.00414	45.7	0.020	2280
Brunswick(a)[d]	0.0182[e]	0.0022[f]	8.3	0.0165	501
Brunswick(b)[d]	0.160[e]	0.0015[f]	107	0.0165	6470

a. NRR - Normalized release rate = absolute release rate/coolant concentration.

b. Carryover fraction = ratio of steam to reactor water concentration.

c. Modified NRR = NRR ÷ carryover fraction.

d. Brunswick(a) - average for period 3/17-4/20/82 (prior to refueling).
Brunswick(b) - average for period 12/7-12/27 (post refueling).

e. Average of measurements in Table 6.3.

f. Table 3.2.

g. The modified NRR measured during a two month period as part of another measurement program was 470.

TABLE 6.5

REACTOR BUILDING ^{131}I RELEASE RATE

1982 Date	Vent Release Rate Unit 1 (μCi/s)	Vent Release Rate Unit 2 (μCi/s)	Average Reactor Coolant Unit 1 (μCi/g)	Average Reactor Coolant Unit 2 (μCi/g)	Normalized Release (μCi/s/μCi/g) Unit 1	Normalized Release (μCi/s/μCi/g) Unit 2
3/18-4/1	1.36(-5)	3.17(-3)	1.0(-5)	2.2(-3)	1.4	1.4
4/1-4/15	1.47(-5)	1.47(-3)	1.0(-5)	2.2(-3)	1.5	0.67
4/15-5/8	1.73(-5)	b	1.0(-5)	2.2(-3)	1.7	b
4/15-4/22	b	3.08(-3)	1.0(-5)	2.2(-3)	b	1.4
4/22-5/8	b	2.62(-3)		2.2(-3)	b	1.2
5/8-5/22	1.45(-5)	4.59(-3)	1.0(-5)	2.2(-3)	1.5	2.1
5/22-6/3	1.1(-5)	4.1(-4)	1.0(-5)	2.2(-3)	1.1	0.2
6/3-6/17	8.9(-6)	4.1(-5)	1.0(-5)	2.2(-3)	0.89	0.02
6/17-7/2	7.8(-6)	2.4(-5)	1.0(-5)	2.2(-3)	0.78	0.01
7/2-7/15	b	*	1.0(-5)	2.2(-3)	b	
7/2-7/22	8.6(-7)	b	1.0(-5)	2.2(-3)	0.09	b
7/22-8/11	*	*		c	-	-
9/29-10/14	b	2.26(-4)		c	-	-
10/10-10/21	6.0(-6)	1.69(-4)		c	-	-
10/21-10/27	*	*		c	-	-
10/27-11/9	*	1.00(-4)	1.3(-5)[d]	c	-	-
11/9-11/17	3.7(-5)	1.3(-5)	1.3(-5)[d]	c	2.8	-
11/15-11/22	7.94(-6)	7.59(-6)	1.3(-5)[d]	c	0.61	-
11/22-11/29	1.22(-5)	1.98(-5)	1.3(-5)[d]	c	0.94	-
11/29-12/5	2.46(-5)	1.43(-5)	1.3(-5)[d]	c	1.9	-
12/5-12/12	4.61(-6)	1.21(-4)	1.3(-5)[d]	1.5(-3)	0.35	0.08
12/13-12/19	6.61(-6)	1.98(-4)	1.3(-5)[d]	1.5(-3)	0.51	0.13
12/20-12/26	*	4.81(-4)		1.5(-3)	-	0.32

* Not measured.

a. No reactor coolant numbers available.

b. Determined for a different sample period.

c. Reactor water concentration uncertain because of frequently changing operating conditions for Unit 2.

d. Unit 1 non-spike coolant level 1.3(-5) 10/27/82 - 12/6/82.

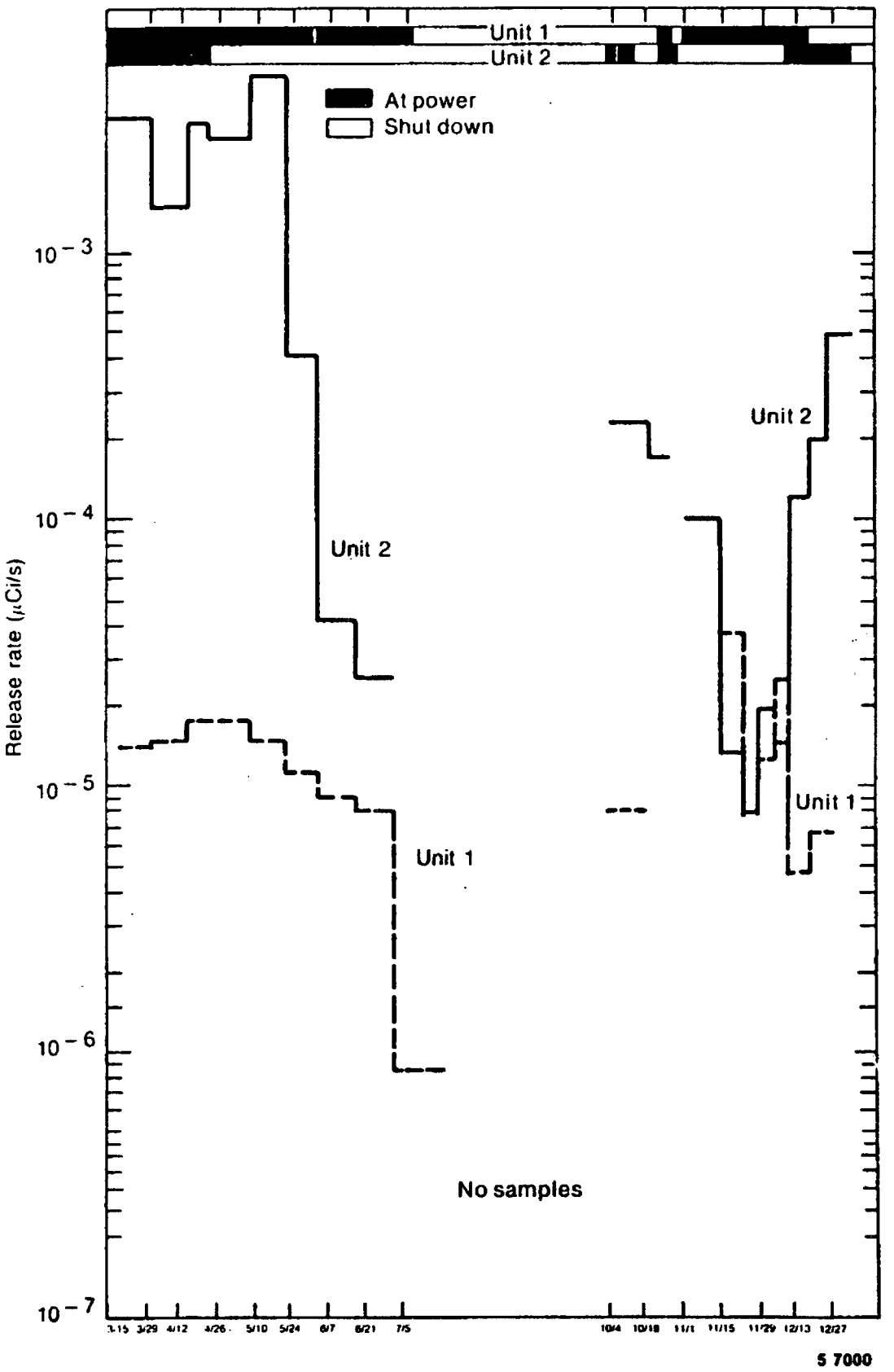


Figure 6-6. ^{131}I Release Rate In Reactor Building Ventilation Exhaust Air Units No. 1 and No. 2

TABLE 6.6

COMPARISON OF RELEASE RATES OF ^{131}I IN REACTOR BUILDING VENTILATION EXHAUST AIR

Plant	Normalized Release Rate (NRR)	
	Power Operation (μCi/s/μCi/g)	Refueling Outage (Ci/outage/μCi/g)
Monticello[a]	0.35	0.47[d]
Oyster Creek[a]	0.19	1.3[d]
Vermont Yankee[a]	0.038	3.2[d]
Pilgrim[a]	0.41	No measurements
Brunswick, Unit 1[b]	1.6	Insufficient measurements
Brunswick, Unit 2[c]	1.1	4.8[e]

a. Reference 21, Table 4.

b. Average of NRRs for seven sampling periods from 3/18 to 7/2/82, Table 6.5.

c. Average of NRRs for three sampling periods from 3/18 to 4/22/84, Table 6.5.

d. Reference 21, Table 4, Releases at Oyster Creek and Vermont Yankee include containment purge.

e. 9.7(-3) Ci released from 4/22-7/2/82, Table 6.5, reactor water concentration = 2.2(-3) μCi/g.

^{131}I from the sample sink duct was 1.0×10^{-5} μCi/s. For the same period the average concentration in total reactor building ventilation exhaust was 2.6×10^{-3} μCi/s. Obviously the sample sink exhaust was not a significant source.

The ^{131}I NRR during the refueling outage of Unit No. 2 was higher than that measured at the other plants. As already pointed out, extensive maintenance was carried out on the reactor water cleanup system during the outage and opening up the reactor system for refueling. The Unit No. 2 ^{131}I NRR, 5 to 10 times higher before refueling than after, may have been reduced as a result of these repairs.

Table 6.7 lists the species fractions for samples taken in the Unit No. 2 reactor building ventilation exhaust. During power operation the majority of the ^{131}I released was in particulate and elemental form. During the outage, particulate ^{131}I decreased to zero, elemental iodine decreased and the species HOI and organic increased. The rapid decrease of the particulate fraction indicates that the source of fresh ^{131}I was eliminated at shutdown, and the relatively high ^{131}I releases during the outage were from a different source than the one during power operation.

Table 6.8 shows a comparison between ^{131}I species at Brunswick compared to four other BWRs. The species fractions are quite variable from plant to plant. Brunswick's are similar to those at Monticello during power operation. At Monticello most of the ^{131}I came from leaks associated with the reactor water cleanup pump.[14] Table 6.8 shows that during the outage at Monticello the particulate fraction also decreased. However, the elemental fraction was half that at Brunswick. At both plants HOI was predominant.

6.3.3 Turbine Building

Releases of ^{131}I in turbine building exhaust air at Brunswick is of special interest. At Brunswick, approximately 90% of the ventilation air is recycled. Only 15,000 cfm is exhausted from each unit and the exhaust is filtered. At other BWRs where measurements are available, ventilation air is, for the most part, once-through. This low exhaust rate might cause higher concentrations of nuclides. As a first approximation the concentration should be inversely proportional to the exhaust rate. On the other hand, the longer the residence time, the greater will be the deposition of iodine on surfaces, which would tend to lower the concentration.

Table 6.9 summarizes the ,easurements of ^{131}I releases from each of the charcoal filters. Table 6.10 summarizes releases measured after the charcoal filters. Figures 6-7 and 6-8 show ^{131}I release rate as a function of time along with plant power history and against a background of releases in the main stack. The data show that releases from the

TABLE 6.7

IODINE SPECIES PERCENTAGES IN UNIT NO. 2 REACTOR BUILDING VENT

Date	Nuclide	Particulate Elemental PF %	Particulate Elemental CdI_2 %	HOI Iph %	Organic AgX %	Organic Ch %	(PF + CdI_2)%
3/18-4/1	^{131}I	22	27	38	12	1	49
	^{132}I	38	33	24	5	b	71
	^{133}I	30	30	36	4	b	60
	^{135}I	36	29	33	2	b	65
4/1-4/15	^{131}I	27	42	22	8	b	69
	^{133}I	40	38	21	<1	b	78
4/15-4/22	^{131}I	30	25	37	8	b	55
	^{133}I	34	22	37	7	b	56
	^{135}I	42	24	33	<1	b	66
Unit No. 2 Shutdown 4/23							
4/22-5/8	^{131}I	11	18	54	17	1	29
5/8-5/22	^{131}I	1	13	73	12	b	14
5/22-6/3	^{131}I	2	22	52	24	b	24
6/3-6/17	^{131}I	c	35	42	23	b	35
6/17-7/2	^{131}I	c	23	44	33	b	23
9/29	^{131}I	c	a	a	a	100	c
10/14	^{131}I	d	a	a	a	100	c
10/21	^{131}I	11	28	48	14	*	39
	^{133}I	27	25	35	12	*	52
	^{135}I						
10/27	^{131}I	c	35	39	22	4	c
11/9	^{131}I	c	<23	46	31	b	c

* Radionuclide not measured.
a. Species sampler not used.
b. Charcoal breakthrough indicator value was a less-than or less-than 1%.
c. Not detectable.
d. No particulate filter installed.

TABLE 6.8

COMPARISON OF ^{131}I SPECIES IN REACTOR BUILDING VENTILATION EXHAUST AIR

Plant	Particulate %	Elemental %	HOI %	Organic %
		Power Operation		
Monticello[a]	35	32	24	9
Oyster Creek[a]	34	22	10	34
Vermont Yankee[a]	11	22	14	54
Pilgrim[a]	7	62	23	8
Brunswick, Unit 2	26	33	31	10
		Outage		
Monticello[b]	5	30	40	25
Brunswick, Unit 2	4	15	66	16

a. Reference 21, Table 4.

b. Reference 21, Table 4, Oyster Creek and Vermont Yankee not included because reactor building exhaust included drywell purge.

TABLE 6.9

TURBINE BUILDING ^{131}I RELEASE RATES AT CHARCOAL FILTER INLET

1982 Date	Release Rate Unit 1 µCi/s	Release Rate Unit 2 µCi/s	Average Rx Water Conc. Unit 2	Normalized[d] Release Rate (µCi/g/µCi/s)
3/14-3/21	7.0(-4)	1.47(-3)	2.2(-3)	0.99
3/21-4/1	3.7(-4)	4.60(-4)	2.2(-3)	0.38
4/1-4/15	1.9(-4)	4.50(-4)	2.2(-3)	0.29
4/15-4/22	*	6.18(-4)	2.2(-3)	0.56[b]
4/22-4/27	*	3.39(-4)	2.2(-3)	0.31[b]
4/27-5/9	*	1.59(-3)	2.2(-3)	1.4[b]
5/9-5/20	5.3(-4)	8.40(-4)	2.2(-3)	0.62
5/20-6/3	1.6(-4)	a	2.2(-3)	--
5/20-6/17	a	8.32(-5)	2.2(-3)	7.8(-2)
6/3-6/17	1.8(-5)	a	2.2(-3)	--
6/17-7/2	*	5.1(-6)	2.2(-3)	1.1(-3)[b]
10/21-10/27	*	*	c	--
10/27-11/9	*	1.79(-5)	c	--
11/9-11/17	*	4.5(-6)	c	--

* Not measured.

a. Determined for a different sample period.

b. Assume Unit 1 release equals Unit 2. The normalized release rate is calculated using the sum of the two turbine building vents divided by the Unit 2 reactor water concentration.

c. Reactor water concentration uncertain because of frequently changing operating conditions for Unit 2.

d. The normalized release rate is calculated using the sum of the two turbine building vents divided by the Unit 2 reactor coolant concentrations.

TABLE 6.10

TURBINE BUILDING NORMALIZED ^{131}I RELEASE RATE[d]

1982 Date	Release Rate Unit 1 µCi/s	Release Rate Unit 2 µCi/s	Average Rx Water Conc. Unit 2	Normalized Release Rate (µCi/g/µCi/s)
3/14-3/21	4.0(-5)	3.2(-5)	2.2(-3)	3.3(-2)
3/21-4/1	1.3(-5)	1.5(-5)	2.2(-3)	1.3(-2)
4/1-4/15	7.3(-6)	7.8(-6)	2.2(-3)	6.9(-3)
4/15-4/22	7(-6)	8(-6)	2.2(-3)	6.8(-3)
4/22-4/23	<4(-5)	b	2.2(-3)	a
4/22-4/27	*	1.1(-5)	2.2(-3)	1.0(-2)[c]
4/27-5/9	*	2.3(-5)	2.2(-3)	2.1(-2)[c]
5/9-5/20	2.1(-5)	1.4(-5)	2.2(-3)	1.6(-2)
5/20-6/3	7.1(-6)	5.5(-6)	2.2(-3)	5.7(-3)
6/3-6/17	8(-7)	1.3(-6)	2.2(-3)	9.5(-4)
6/17-7/2	<6(-7)	7(-7)		a
7/2-7/15	<6(-8)	<3(-7)		a
7/22-8/11	<2(-7)	<2(-7)		a
9/29-10/14	4.0(-6)	5.1(-6)	3.9(-4)	2.3(-2)
10/14-10/21	1.4(-6)	2.8(-6)	e	--
10/21-10/27	5(-6)	<8(-6)	e	--
10/27-11/9	2.4(-6)	2.4(-6)	e	--
11/9-11/15	<1(-6)	<3(-6)	e	--
11/15-11/22	4.9(-7)	*	e	--
11/22-11/29	3.1(-7)	*	e	--
11/29-12/5	5.0(-7)	5.0(-8)	1.5(-3)	--
12/5-12/12	5.0(-6)	9.0(-7)	1.5(-3)	3.9(-3)
12/12-12/19	9.6(-6)	2.6(-6)	1.5(-3)	8.1(-3)
12/19-12/26	4.9(-6)	1.9(-6)	1.4(-3)	4.5(-3)

* Not measured.

a. Calculations were not made due to less-than values.

b. Determined for a different sample period.

c. Assume Unit No. 1 release equals Unit No. 2.

d. The normalized release rate is calculated using the sum of the two turbine building vents divided by the Unit 2 reactor coolant concentrations.

e. Reactor water concentrations uncertain because of frequently changing operating conditions for Unit 2.

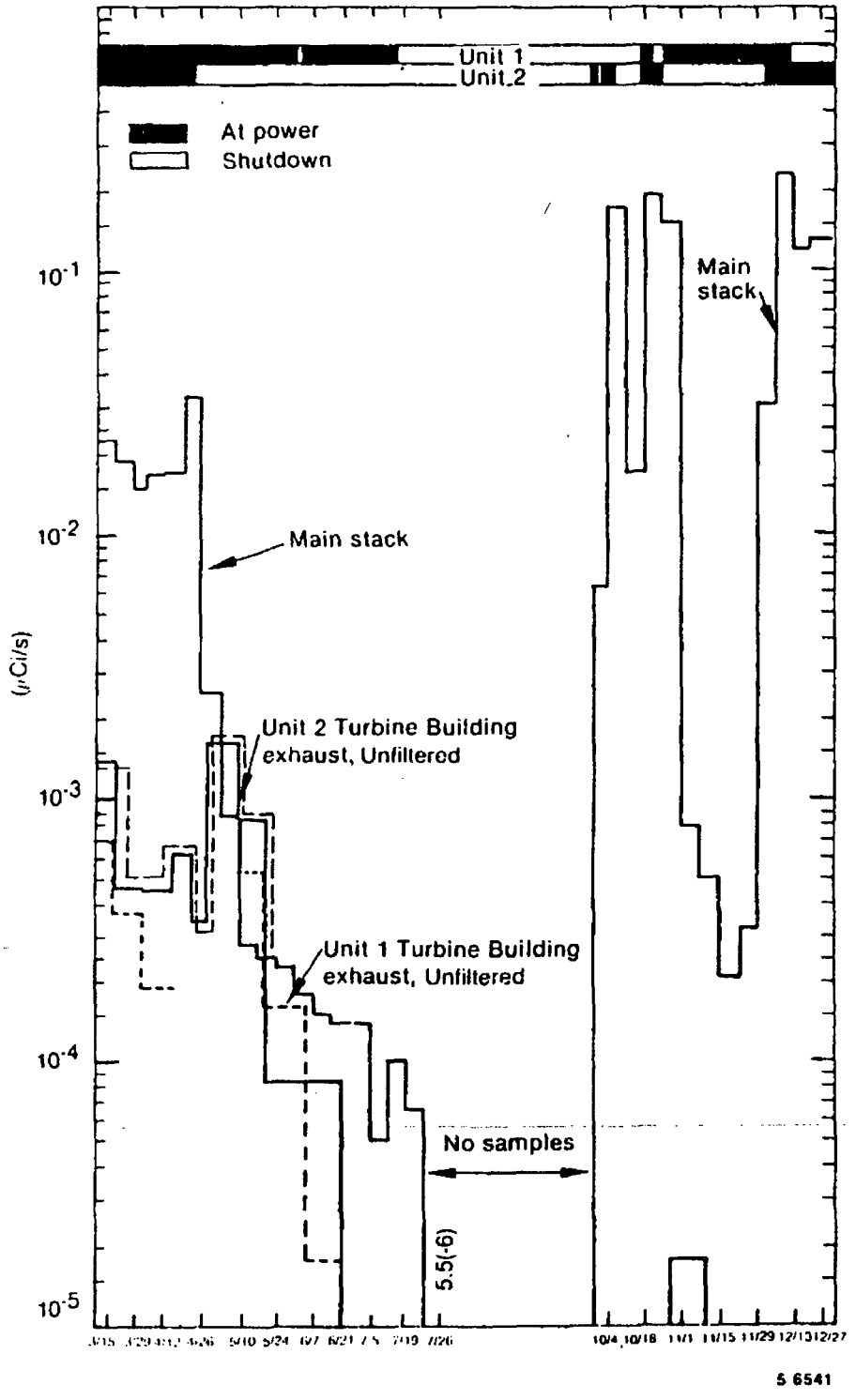


Figure 6-7. ^{131}I Release Rate In Turbine Building Ventilation Exhaust (Pre-Filter)

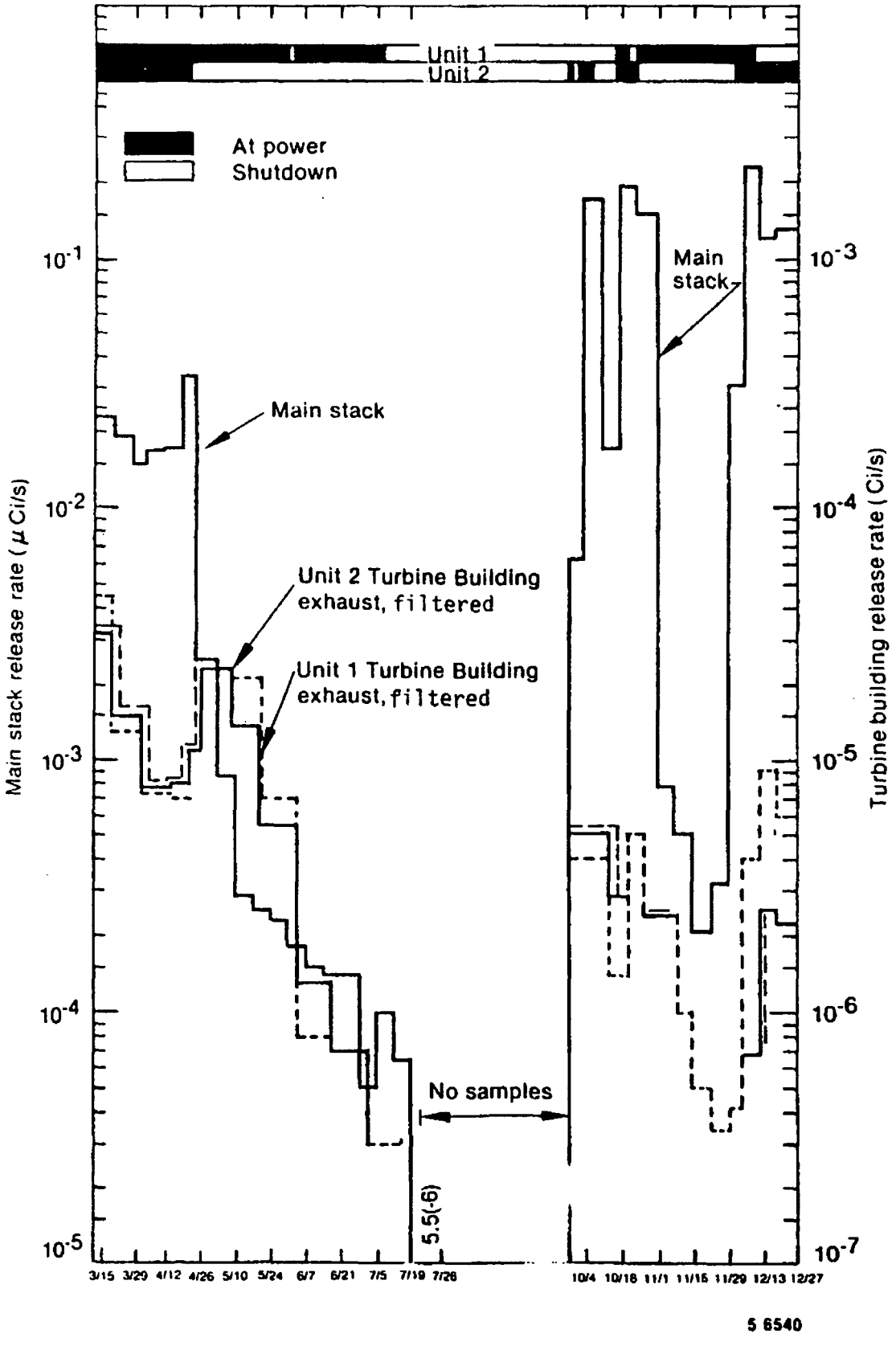


Figure 6-8. ^{131}I Release Rate in Turbine Building Ventilation Exhaust (Post-Filter)

two charcoal filters were approximately the same. This is not surprising because the recirculated air is common between the two. Note also that release rates were maintained at or above the levels during operation for 30 days after the shutdown. These elevated releases are expected as Unit No. 2 turbine maintenance was carried out during the outage.

Table 6.11 shows a comparison of ^{131}I releases between Brunswick and four other BWRs which had no filteration systems. Note that before filtration, releases from the Brunswick turbine building were among the lowest. They were as low as those at Vermont Yankee, which were considered anomolously low when compared with other BWRs with once-through ventilation systems. The last column in Table 6.11 is a comparative measure of the concentration of ^{131}I in turbine building ventilation air for each plant. When compared to Vermont Yankee, the concentration appears to be inversely proportional to the air exhaust rate. However, the concentration at Brunswick was lower than that at Pilgrim, Monticello and Oyster Creek, all of which have once-through turbine building ventilation systems. Therefore, it appears that there are more important factors in determining iodine concentrations in turbine building air than ventilation rate.

Table 6.11 shows clearly that the release of ^{131}I to the environment in turbine building exhaust air at Brunswick was much smaller than the other plants because of filtration through charcoal. Tables 6.12 and 6.13 show that the major iodine species changes from elemental and particulate to HOI and eventually organic after reactor shutdown. One might expect that because of longer residence time of the iodine in the turbine building that there would be a larger fraction of the less reactive iodine species such as organic. Tables 6.12 and 6.13 lists the radioiodine species fractions measured in the Units No. 1 and No. 2 turbine building exhaust ahead of the charcoal filters respectively. Table 6.14 shows a comparison of ^{131}I species fractions between Brunswick and three other BWRs. As expected from the ventilation recirculation mode of the turbine building air, the organic fraction for periods of power operation is larger for Brunswick turbine building effluents, 24% compared to 9% for the other three BWRs. The fraction of HOI was also larger at Brunswick, 23% compared to 13%.

Table 6.14 shows that during prolonged outages the species fractions were similar at Brunswick to the other BWRs. This is because the source of iodine changes, with time, from particulate and I_2 to the less reactive forms HOI and organic. The main source of iodine is resuspension from surfaces on which iodine was deposited during operation. Table 6.15 shows a comparison between releases in turbine building ventilation exhaust during outages at Brunswick compared to the average of three other BWRs. The range of values making up the 4.3 Ci/outage/μCi/g average was 1.0 to 5.8. The release from Brunswick is within the range. The increase in the HOI fraction for the May 9, 1982, samples may have been caused by draining of the reactor vessel to the condenser hot well and the opening up of the Unit No. 2 turbine system. Note that the ventilation system design was also very effective during outages in reducing ^{131}I releases to the environment.

TABLE 6.11

COMPARISON OF ^{131}I RELEASE RATES IN TURBINE BUILDING EXHAUST AIR DURING POWER OPERATION[a]

Plant	NRR (g/s)	Carryover Fraction	Modified NRR (μCi/g/μCi/s)[b]	Modified Normalized Conc. (μCi/g/μCi/s)[e]
Pilgrim (72,000 cfm)[d]	2.7	8.0(-3)	340	10(-6)
Monticello (55,000 cfm)	0.98	4.5(-3)	220	8.5(-6)
Oyster Creek (70,000 cfm)[d]	1.9	2.3(-2)	83	2.5(-6)
Vermont Yankee (72,000 cfm)[d]	0.11	4.0(-3)	28	8.2(-7)
Brunswick Unfiltered[c] (30,000 cfm)[d]	0.49	1.65(-2)	30	2.1(-6)
Brunswick, Filtered[c]	0.010	1.65(-2)	0.64	--

a. NRRs for Pilgrim, Monticello, Oyster Creek and Vermont Yankee are taken from Reference 21, Table 2. NRRs for power operation are used for comparison. Contributions from the gland seal exhauster are not included.

b. Modified NRR equals NRR divided by the carryover fraction.

c. NRRs for Brunswick are calculated for the period 3/14-4/22/82 by dividing the average of the sum of release rates, from Unit 1 and Unit 2 in Table 6.9 and 6.10 by the average Unit reactor water concentration 2.2×10^{-3} μCi/g. The release rate for Unit in Table 6.9 is assumed to be equal to that in Unit 2 for the period 4/15-4/22/82.

d. Nominal air exhaust rate.

e. The modified normalized concentration is the modified NRR divided by the air exhaust rate in cc/s.

TABLE 6.12

IODINE SPECIES PERCENTAGES IN UNIT NO. 1
TURBINE BUILDING CHARCOAL CLEANUP INLET

1982 Date	Nuclide	Particulate Elemental PF %	Particulate Elemental CdI_2 %	HOI Iph %	Organic AgX %	Organic Ch %	(PF + CdI_2)%
3/14-3/21	^{131}I	16	34	24	25	1	50
	^{133}I	25	33	26	15	1	55
	^{135}I	17	13	<51	<19	b	30
3/21-4/1	^{131}I	12	37	24	26	1	49
	^{133}I	20	40	25	14	1	6
	^{135}I	25	44	21	9	b	69
4/1	^{131}I	14	39	27	19	1	53
	^{133}I	21	30	32	17	b	51
Unit No. 2 Shutdown 4/23							
5/9-5/20	^{131}I	2	16	55	25	3	18
5/20-6/3	^{131}I	1	10	47	40	3	11
6/3-6/17	^{131}I	3	a	a	a	97	
	^{133}I	27	a	a	a	73	

a. Species sampler not used.
b. Charcoal breakthrough indicator value was a less-than or less-than 1%.

TABLE 6.13

IODINE SPECIES PERCENTAGES IN UNIT NO. 2
TURBINE BUILDING CHARCOAL CLEANUP INLET

1982 Date	Nuclide	Particulate Elemental PF %	Particulate Elemental CdI_2 %	HOI Iph %	Organic AgX %	Organic Ch %	(PF + CdI_2)%
3/14-3/21	^{131}I	26	26	22	25	1	52
	^{133}I	33	25	26	15	1	58
	^{135}I	39	21	29	10	b	60
3/21-4/1	^{131}I	10	42	25	22	1	52
	^{135}I	17	45	25	14	b	62
4/1-4/15	^{131}I	18	43	17	21	1	61
	^{133}I	31	40	13	16	b	71
4/15-4/22	^{131}I	27	33	20	19	1	60
	^{133}I	35	33	19	12	1	68
Unit No. 2 Shutdown 4/23							
4/22-4/27	^{131}I	15	23	20	40	2	38
	^{133}I	23	29	21	27	b	52
4/27-5/9	^{131}I	2	13	47	31	6	15
5/9-5/20	^{131}I	1	11	66	18	4	12
5/20-6/17	^{131}I	1	9	23	62	5	10
6/17-7/2	^{131}I	20	a	a	a	80	a
10/21-10/27	^{131}I	32	17	16	36	b	49
	^{133}I	43	14	15	28	b	57
10/27-11/9	^{131}I	12	a	a	a	88	a
	^{133}I	35	a	a	a	65	a
11/9-11/15	^{131}I	0	54	19	27	6	54

a. Species sampler not used.
b. Charcoal breakthrough indicator value was a less-than or less-than 1%.
c. Particulate iodine was a less-than.

TABLE 6.14

COMPARISON OF ^{131}I SPECIES FRACTIONS IN TURBINE BUILDING AIR[a]

Plant	Fraction		
	Particulate & I_2 %	HOI %	Organic %
Monticello[b]	77	12	11
Oyster breek[2]	74 [24]	17 [50]	9 [26]
Vermont Yankee[b]	84 [12]	9 [57]	7 [31]
Brunswick 2, Unfiltered[c]	56 [15][d]	21 [50]	23 [35]
Brunswick 1, Unfiltered[e]	51 [15][f]	25 [51]	24 [34]

a. Numbers not in brackets are for power operation. Brackets numbers are for outages.

b. Reference 17, Table 3-12.

c. Average of 3/14-4/22/82 values in Table 6.13.

d. Average of 4/22-6/17/82 values in Tabel 6.13 weighted by release during the period.

e. Average of 3/14-4/?/82 values in Table 6.12.

f. Average of 2 sampling periods, 5/9-6/3/82.

TABLE 6.15

COMPARISON OF ^{131}I RELEASE RATES IN TURBINE BUILDING VENTILATION EXHAUST AIR AHEAD OF THE FILTER DURING A REFUELING OUTAGE

Plant	Normalized Release (Ci/outage/μCi/g)
3 Plant Average[a]	4.3
Brunswick, Unfiltered[b]	2.4
Brunswick, Filtered[c]	5.0(-2)

a. From Reference 21, Table 2, average 52 day outage with turbine side maintenance from measurements at Monticello, Oyster Creek, and Vermont Yankee multiplied by 1.65 to account for the ratio of carryover fractions for Brunswick (1.65%) and the others (1%).

b. From Table 6.9, total ^{131}I release during 71 day outage (5.3(-3) Ci), Unit 2 reactor water concentration was 2.2(-3) μCi/g.

c. From Table 6.10, total ^{131}I release during 71 day outage (1.1(-4) Ci), Unit 2 reactor water concentration was 2.2(-3) μCi/g.

6.3.4 Radwaste

Table 6.16 lists the release rates of ^{131}I measured in the ventilation exhaust from the radwaste building at Brunswick during power operation of Unit No. 2 from March 14 through April 22, 1982. The average was 3.8(-4) μCi/s. This is only 2% of the main stack release during the same period. It also accounts for only 10% of the combined releases in ventilation exhaust air from the radwaste building, reactor building and turbine buildings (unfiltered) during power operation. Release rates remained relatively high during the first 32 days of the shutdown. The average was 2.1(-4) μCi/s.

Table 6.17 shows a comparison of the release rate measured in the radwaste ventilation exhaust air during power operation at Brunswick and at three other BWRs. It happens that the NRR at Brunswick is equal to the average of the other three plants. This is fortuitious, but it does indicate that releases of ^{131}I in Brunswick radwaste building air are in the range of those measured at other BWRs.

Table 6.16 shows the radioiodine species fractions measured in radwaste ventilation exhaust air. As one would expect from the measurements of others[14,20], the majority of the ^{131}I released was in the organic form. The average organic fraction for the period of power operation was 53%. It was somewhat higher during the refueling outage. The HOI species was the next most abundant species followed by elemental and particulate. The average fractions for these species during power operations were 22%, 12%, and 13% respectively.

6.3.5 Reactor Vessel Vent

A vent in the Unit No. 2 vessel head was opened on April 27, 1982 prior to head removal. Air purged through the vessel was filtered through a portable charcoal filter system. An iodine species sample was taken prior to the charcoal bed, the results of which are presented in Appendix Table B.6-19 with the species percentages shown in Table 6.18. The sample was taken three days after shutdown and two days after vessel pressure was dropped to zero. It represents iodine which has evolved into the air space above the core. The source of iodine is to some extent the water covering the core below the air space, but the main source was most likely the surfaces of the steam dryer and moisture separator. The purge rate is not known and therefore, the absolute concentrations have no meaning. However, the relative concentrations are interesting. The highest concentration was ^{132}I which has only a 2.3 hour half-life. This means that the source of the ^{132}I was its parent, ^{132}Te, which has a 12 day half-life. The majority of all three radioiodines was in the chemical form HOI, but the fraction was higher for ^{132}I than either ^{131}I or ^{133}I. It is interesting to note that none of the ^{132}I was in organic form, whereas 12% of the other two nuclides was organic showing the aging effects on the species.

TABLE 6.16

IODINE SPECIES PERCENTAGES IN RADWASTE BUILDING VENTILATION

1982 Date	Nuclide	Particulate Elemental		HOI	Organic		Total ^{131}I Release Rate $\mu Ci/s$
		PF %	CdI_2 %	Iph %	AgX %	Ch %	
3/14-3/21	^{131}I	12	11	16	61	b	2.8(-4)
3/21-4/1	^{131}I	16	12	20	51	b	9.0(-5)
4/1-4/15	^{131}I	34	13	21	32	b	1.1(-4)
4/15-4/22	^{131}I	12	9	25	54	b	1.0(-3)
4/22-5/9	^{131}I	13	6	8	69	3	2.7(-4)
5/9-5/20	^{131}I	9	8	20	63	b	1.7(-4)
5/20-6/3	^{131}I	21	6	6	55	13	2.0(-4)
6/3-6/17	^{131}I	11	19	14	56	b	3.5(-5)
7/2-7/15	^{131}I	46	< 9	<11	35	b	7.1(-6)
10/21-10/27	^{131}I	15	a	a	a	85	1.1(-4)
10/27-11/9	^{131}I	13	6	6	67	8	4.1(-5)

a. Species sampler not used.
b. Charcoal breakthrough indicator value was a less-than or less-than 1%.
c. Particulate iodine was a less-than.

TABLE 6.17

COMPARISON OF RELEASE RATES OF ^{131}I IN RADWASTE BUILDING VENTILATION EXHAUST AIR DURING POWER OPERATION

Plant	NRR (g/s)
Monticello[a]	0.028
Oyster Creek[a]	0.49
Vermont Yankee	0.039
Brunswick[b]	0.18

a. Reference 3 Table 1-4.

b. Average release rate of 4 periods 3/14-4/22/82 Table B.6-16 while Unit 2 was operating (3.82×10^4 μCi/s) divided by Unit 2 reactor water concentration of 2.2(-3) μCi/g.

TABLE 6.18

IODINE SPECIES PERCENTAGES INSIDE REACTOR VESSEL PRIOR TO HEAD REMOVAL

		Particulate Elemental		HOI	Organic		
Date/Time	Nuclide	PF %	CdI_2 %	Iph %	AgX %	Ch %	Total conc. (μCi/cc)
4/27/1850	^{131}I	4	28	58	11	a	4.5(-9)
	^{132}I	<3	21	74	<3	a	7.3(-9)
	^{133}I	6	24	57	13	a	2.8(-10)

a. Charcoal breakthrough indicator value was a less-than or less-than 1%.

Another comparable source of iodine, noted at other BWRs, is the exhaust from the reheater protection system.[14] The protection system blows hot air over the surfaces of the moisture separator located down stream of the high pressure turbine. The system is used at shutdowns to dry out the carbon steel. The only source of iodine is that which was deposited on the surfaces of the moisture separator during operation. The HOI was the predominate species for the source. The species fractions from other BWRs were 11%, 59%, and 30% for elemental, HOI and organic respectively.

C. C. Lin[9] reports that HOI is a major portion of the volatile iodine present in the coolant water and is produced by radiation-induced oxidation of I^-. During shutdown when temperature and pressure are reduced, one might expect HOI to be the major species released as other forms require a physical transport mechanism which is not present (i.e., steam). Another explanation might be that HOI is formed by a chemical reaction with the iodine deposited on the surface.

6.3.6 HEPA Charcoal Decontamination Factors

Table 6.19 shows the concentrations of each species of radioiodine measured at the inlet and outlet of the standby gas treatment system during the purging of the drywell of Unit No. 2 just after shutdown. The DF for the charcoal filter for total ^{131}I was 22. Although the measurements indicate that the majority of the iodine was in the form of particulate and elemental, the concentrations were too low to be reliable.

Particulate and charcoal filter DFs are shown for total iodine as well as species in Talbes 6.20 and 6.21 for each turbine building exhaust cleanup unit.

The turbine building units do not show a DF dependence with time. There does, however, appear to be a trend of increased total DF with decreased organic percentage. figure 6-9 shows the ^{131}I DF plotted as a function of the organic fraction of ^{131}I. The DF of charcoal for methyl iodide is not as high as for elemental and HOI. The species DFs from Tables 6.17 and 6.18 exhibit values between 28 and 800 for elemental and HOI. The organic species DF is between 8 and 30. As the total DF is a combination of the individual species DFs; therefore, the total DF is dependent on the percentages of the species. The higher percentage of elemental and HOI during reactor transients causes a higher total DF than during stable operation. During a reactor transient the percentage of organic iodine decreases due to the release of younger iodine from the fuel as I^- pr I_2, which increases the total DF of the system.

TABLE 6.19

IODINE SPECIES PERCENTAGES FOR THE SBGTS, UNIT NO. 2

Date/Time	Nuclide	Particulate Elemental		HOI	Organic		Total conc. (μCi/cc)
		PF %	CdI_2 %	Iph %	AgX %	Ch %	
			Inlet				
4/23/1830	^{131}I	9	7	11	46	27	1.3(-9)
	^{133}I	16	6	16	47	16	4.9(-9)
			Outlet				
4/23/1830	^{131}I	38	38	<13	13	a	6(-11)

a. Charcoal breakthrough indicator value was a less-than or less-than 1%.

TABLE 6.20

IODINE SPECIES AND TOTAL DECONTAMINATION FACTORS FOR TURBINE BUILDING PARTICULATE AND CHARCOAL CLEANUP SYSTEMS - UNIT NO. 1

Date	Nuclide	PF	I_2	PF + I_2	HOI	Organic	Total
3/14	^{131}I	>2(2)	>1(2)	>2(2)	>1(2)	4.7 ± .2	17.5 ± .8
	^{133}I	>8	>5	>6	>1(2)	4.3 ± .5	16 ± 8
3/21	^{131}I	>1(1)	>1(2)	>4(1)	>8(1)	9 ± 1	24 ± 4
	^{133}I	>1(2)	>8(1)	>9(1)	*	11 ± 5	*
4/1	^{131}I	23 ± 5	>7(1)	>5(1)	>1(2)	7 ± 1	26 ± 2
	^{133}I	>3(1)	>1(1)	>2(1)	>5(1)	4.2 ± .7	15 ± 5
5/9	^{131}I	>9	25.3 ± .8	>2(1)	>3(2)	8.6 ± .3	25 ± 1
5/20	^{131}I	>1(1)	>3(1)	>3(1)	>2(2)	10.3 ± .7	23 ± 2
6/3	^{133}I	(b)	(a)	(a)	(a)	(a)	21 ± 8 >7

* Not measured.
(a) Species sampler not used.
(b) Calculation could not be made due to less than values.

TABLE 6.21

IODINE SPECIES AND TOTAL DECONTAMINATION FACTORS
FOR TURBINE BUILDING PARTICULATE AND CHARCOAL CLEANUP SYSTEMS -
UNIT NO. 2

Date	Nuclide	PF	I_2	PF & I_2	HOI	Organic	Total
3/14-3/21	^{131}I	580	>134	212	150	13 ± 1	4.5 ± .4(1)
	^{131}I	>53	>124	>70	>62	>11.3	5 ± 1 (1)
3/21-4/1	^{131}I	>66	>88	>82	>52	7.9 ± .9	3.0 ± .4(1)
	^{131}I	>76	>81	>79	>44	>10	>4.0(1)
4/1-4/15	^{131}I	>1(2)	1.5 ± .3(2)	2.1 ± 4(2)	>1(2)	20 ± 2	6.9 ± .6(1)
	^{131}I	>2(2)	>2(2)	>4	>2(1)	>2(1)	>8(1)
4/15-4/22	^{131}I	>8(1)	7 ± 2(1)	1.3 ± .3(2)	>9(1)	2.3 ± .2(1)	8 ± 2(1)
	^{131}I	>3	>6	>4	>1(1)	>3	>8(1)
4/22-4/27	^{131}I	>2(1)	2.8 ± .7(1)	6.2	3.2 ± .4(1)	7.1 ± .7	3.2 ± .4(1)
4/27-5/9	^{131}I	>9(1)	>6(1)	>7(1)	72(1)	2.9 ± .2(1)	6.8 ± .6(1)
	^{131}I	>1(1)	>4	>5	>2	>4	>4
5/9-5/20	^{131}I	>2(1)	>1(2)	>7(1)	>8(2)	1.44 ± .07(1)	6.1 ± .3(1)
5/20-6/17	^{131}I	>3	a	a	a	a	18 ± 3
6/17-7/2	^{131}I	>6	a	a	a	a	8 ± 2
10/21		>2(1)	>4	>6	>4	>6	
10/27	^{131}I	>3	a	a	a	a	8 ± 1
	^{131}I	>1	a	a	a	a	>1
11/9	^{131}I	b	>2	>.7	>2	b	>2
	^{131}I	b	b	b	b	b	>.3

* Not measured.
a. Species sampler not used.
b. Calculation could not be made due to less-than values.

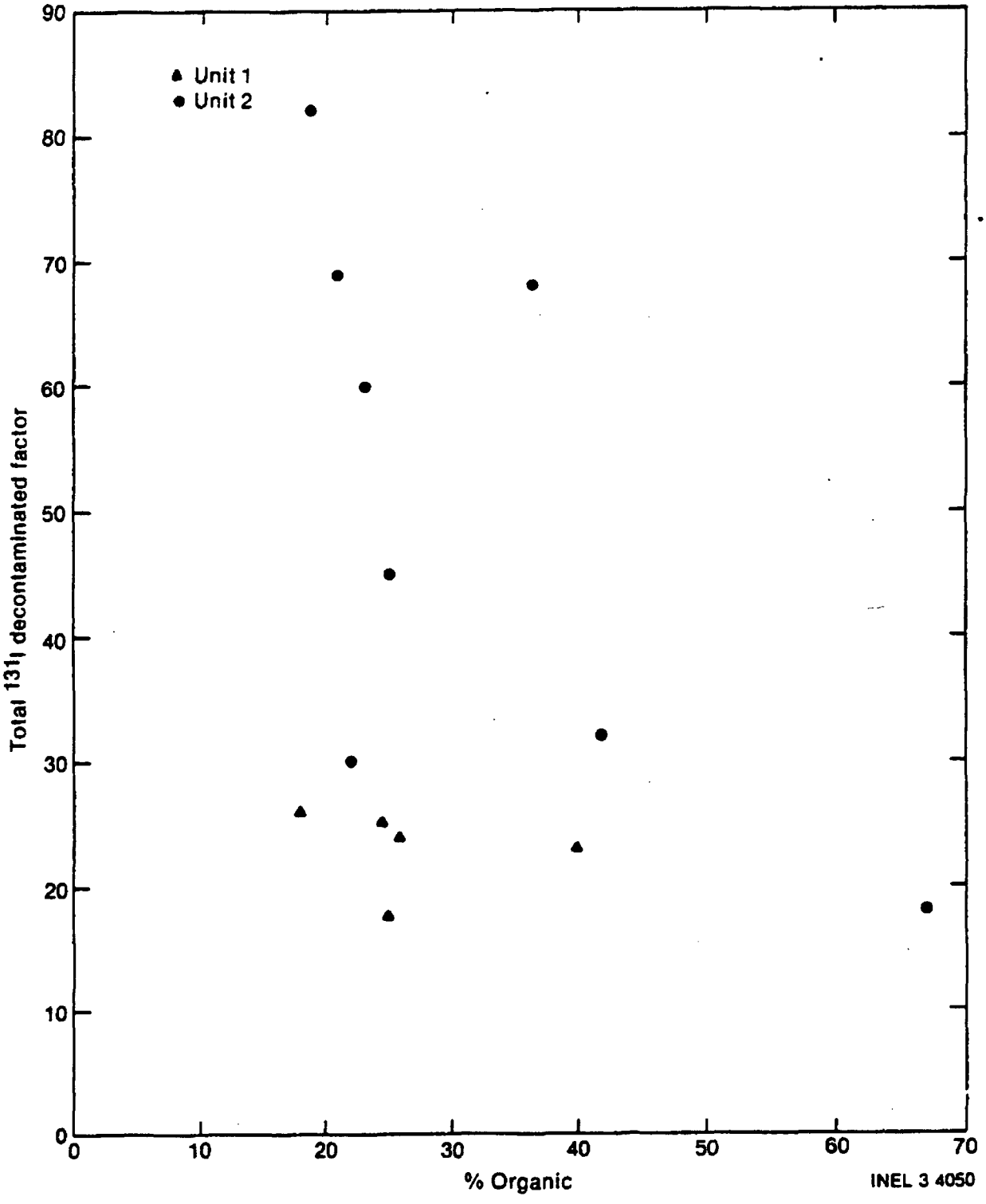


Figure 6-9. Turbine Building HEPA Charcoal ^{131}I DF as a Function of Organic ^{131}I Fraction

6.4 ^{14}C and ^{3}H Releases

The individual ^{14}C and ^{3}H release rates from the five release points and the radwaste building are shown in Appendix Table B.6-20 and B.6-21. The average release rates for power and non-power operation are shown in Tables 6.22 and 6.23.

6.4.1 Reactor Building Releases

Carbon-14 and ^{3}H releases from each reactor building during power operation were nearly the same. This is in contrast to the much higher radioiodine releases from the Unit No. 2 reactor building. As pointed out in Section 6.3.2, the main reason for the larger difference was Unit No. 2's higher reactor coolant ^{131}I concentration. It follows that the coolant concentrations of ^{14}C and ^{3}H were similar in both units. Unfortunately, the concentrations of neither ^{3}H nor ^{14}C in reactor water are available. Appendix Table B.6-20 shows that the release of ^{14}C in reactor building exhaust air was not influenced much by the operation of either plant. The highest release rate of ^{14}C (7.8×10^{-4} μCi/s) in the Unit No. 2 reactor building exhaust was measured while that unit was down. Most of the ^{14}C from both reactor buildings was in the oxidized form. The release rate of ^{3}H from the reactor building was dependent on power operation. The release rate of ^{3}H during the outage at Unit No. 1 was approximately 1/100 that during operation. The release rate of ^{3}H during the refueling outage of Unit No. 2 dropped to between 10% and 20% of the level that prevailed prior to the outage. These measurements indicate that most of the ^{3}H released from the reactor buildings was from hot water leaks during power operations. Releases from other BWR reactor buildings showed a large fraction as a result of evaporation from the fuel storage pool.

6.4.2 Turbine Building Releases

Tritium releases from the two turbine building vents were equal before and during shutdown of both Units (April 22-September 29) while ^{14}C releases from Unit No. 2 were ten times that of Unit No. 1 prior to shutdown. The high ^{14}C release may have been due to a leak in the Unit No. 2 steam jet air ejector which would feed the Unit No. 2 turbine vent.

After startup and repair of the steam jet air ejector leaks, the Unit No. 2 ^{14}C release was only about three times as high as Unit No. 1. The total building release was down by a factor of seven after refueling.

TABLE 6.22

AVERAGE ^{14}C RELEASE RATES
FOR SELECTED OPERATING MODES

	Both Units[d] Operating µCi/s	Unit No. 2[a] Operating Alone µCi/s	Both Units[b] Shutdown µCi/s	Unit No. 1[c] Operating Alone µCi/s
Turbine Building				
Unit No. 1	1.1(-4)	1.9(-5)	2.0(-5)	1.1(-4)
Unit No. 2	8.4(-3)	1.4(-4)	2.0(-5)	4.2(-4)
Reactor Building				
Unit No. 1	5.5(-4)	e	6.0(-4)	8.1(-4)
Unit No. 2	6.0(-4)	2.3(-4)	2.1(-4)	7.8(-4)
Radwaste	1.8(-3)	e	e	3.6(-3)
Main Stack	2.8(-1)[f]	8.6(-2)	1.0(-2)	3.7(-1)

a. One sampling period, 9/29-10/14 (after refueling).

b. One sampling period, 7/22-8/11.

c. Seven sampling periods, 5/9-7/15 and 10/27-11/17.

d. Four sampling periods, 3/15-4/22.

e. Not applicable.

f. One sampling period, 4/19-4/23.

TABLE 6.23

AVERAGE ^{3}H RELEASE RATES
FOR SELECTED OPERATING MODES

	Both Units[d] Operating μCi/s	Unit No. 2[a] Operating Alone μCi/s	Both Units[b] Shutdown μCi/s	Unit No. 1[c] Operating Alone μCi/s
Turbine Building				
Unit No. 1	7.8(-2)	8.9(-3)	1.7(-3)	4.2(-2)
Unit No. 2	1.9(-1)	1.7(-2)	1.0(-3)	5.5(-2)
Reactor Building				
Unit No. 1	1.4(-1)	e	1.7(-3)	2.0(-1)
Unit No. 2	9.3(-2)	2.7(-2)	9.0(-3)	2.0(-2)
Radwaste	2.0(-2)	e	e	4.1(-2)
Main Stack	1.9(-1)[f]	2.2(-1)	3.0(-2)	2.0(-1)

a. One sampling period, 9/29-10/14 (after Unit 2 refueling)

b. One sampling period, 7/22-8/11

c. Seven sampling periods, 5/9-7/15 and 10/27-11/17

d. Four sampling periods, 3/15-4/22

e. Not applicable

f. One sampling period.

6.4.3 Radwaste and Main Stack

The radwaste building contributed about 10% of the ^{3}H and 1% of the ^{14}C to the main stack releases during power operations. The remainder of the activity came from the steam jet air ejectors. Both ^{14}C and ^{3}H activities in the radwaste showed an increase of factors of 2 and 4.5, respectively, during the first month of the Unit No. 2 shutdown. No samples were taken after the refueling shutdown of Unit No. 2. The increase in the ^{14}C and ^{3}H from the radwaste vent was associated with water movements during Unit No. 2 refueling shutdown.

Only one ^{14}C and ^{3}H sample was obtained for the main stack release with both units up. This sample was collected five days prior to Unit No. 2 shutdown.

6.4.4 ^{14}C and ^{3}H Species

All sample points except the main stack showed 70 to 100% oxidized ^{3}H. The main stack showed 30 to 50% oxidized ^{3}H during power operation and 100% when both units were shut down.

The reactor buildings showed 70 to 100% oxidized ^{14}C during power operation and 60 to 70% during shutdown periods. When both units were running, ^{14}C from Unit No. 2 turbine building showed 3 to 30% oxidized compared with 18 to 93% for Unit No. 1. The low oxidized percentages and the higher release rates from Unit No. 2 during power operation may be due to the steam jet air ejector leak in Unit No. 2.

During the shutdown of Unit No. 2, there was still a 60% difference in the oxidized percentages in the turbine building which is probably a result of opening up the Unit No. 2 steam system and releasing fresher ^{14}C.

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APPENDIX A

SAMPLE AND DATA HANDLING

APPENDIX A. SAMPLE AND DATA HANDLING

A.1 Sample Handling

A.1.1 Sample Volumes and General Sampling Procedures

The general sampling procedures that were followed have been described in the report, "Procedures, Source Term Measurement Program".[8] Brief descriptions that include details specific to Brunswick (e.g., sample points, purge times, sample volumes) are included in the appropriate sections of this report.

A.1.2 Sample Validation

Although it is impossible to prove that a given sample is an actual representation of the liquid or gas under study, some confidence can be placed on the quality of the sample by showing how reproducible the results are for replicate samples or for samples from a given system taken under different conditions. Validation of liquid and gaseous samples at Brunswick was handled as described below.

A.1.2.1 Liquid Samples. During the initial phase of the measurements at Brunswick, each sample point was investigated to determine whether or not a valid sample could be obtained. This was done by first discussing the sample point with plant personnel and determining the sampling procedures they recommend (e.g., recirculation times for tanks). The sample line was then purged for a time at least as long as recommended by plant personnel. Replicate samples were taken under identical conditions over a period of time and the results compared in order to give final verification of the sample validity.

A.1.2.2 Gaseous Samples. Verification of the validity of gaseous samples was determined by two methods: the first involving pitot tube measurements, and the second involving helium dilution measurements (see Sections 2.2 and 2.3 in Reference 8). Ventilation duct flows were calculated based on the results of each of the two types of measurements. The two results agreed (to within $\pm$ 10%), indicating that representative samples had been obtained.

A.1.3 Validation of Sample Analyses

In order to ensure the accuracy of analyses, efficiency tables for all systems, both those in the Mobile Laboratory and those at INEL, were established through the use of NBS standards or standards traceable to NBS. These efficiency tables were obtained under all the geometric conditions in which the samples were analyzed. During the measurement period at Brunswick, the efficiencies were checked using standards on a routine basis.

In addition to checks with standards, intercomparisons were made between the source term group and the chemistry group at Brunswick. Tables A.1 and A.2 show the results of these comparisons. Iodine ventilation comparisons (Table A.1) shows the EG&G radioiodines to be slightly lower than the Brunswick data. We feel this is due to differences in the EG&G counting geometry and configuration of the plant's charcoal cartridge.

Reactor coolant comparisons (Table A.2) show that EG&G values are lower than Brunswick values for ^{131}I, ^{54}Mn, ^{56}Mn, ^{58}Co, and ^{60}Co which are probably caused by short half-life interferences in the Brunswick analysis results, where the sample is only counted once shortly after acquiring the sample. The EG&G data for the longer half-life radionuclides are obtained from counting samples after long-time delay to allow for decay of the short half-life interferences.

A.2 Data Handling

Analysis of each gamma-ray spectrum was performed either in the Mobile Laboratory or at INEL using a program that searches the spectrum for gamma-ray peaks, identifies the radionuclide producing the detected gamma rays, decay corrects activities to the sample collection time, and provides radionuclide concentrations together with counting error estimates. For radionuclides of interest that were not detected, the program determines lower limits of detection.

Uncertainties quoted for radionuclide concentrations in this report are 1σ errors due to counting statistics only. An additional uncertainty of approximately 10% should be added to the quoted errors to account for calibration and volume measurement errors. Indeterminate sampling errors have not been treated. However, the total errors due to sampling, calibration, and volume measurements are estimated to be approximately 20%.

In the determination of radionuclide concentrations in reactor coolant, the sample was gamma counted three to four times over a period of two weeks in order to obtain data on both long- and short-lived radionuclides. When a radionuclide was detected in more than one spectrum, the quoted concentration for that sample was obtained from the average of the individual results.

In the course of many of the measurements, some of the radionuclides in the standard list are not detected by the peak search routine. When this occurs, a detection limit is calculated. The algorithm used for the Brunswick detection limit was a forced Gaussian fit of fixed centroid and fixed width where the background and the height of the gaussian were allowed to vary. If the area calculated by this technique was less than two times the standard deviation (σ) for the calculation, then the detection limit was quoted as the 2σ value calculated for the fit. If the area calculated by this fit technique was larger than the 2σ error, then it was assumed that the nuclide was present.

TABLE A.1

COMPARISON OF IODINE VENTILATION SAMPLE AND STACK GAS RESULTS

(μCi/cc)

Stack Gas Sampled 3/26/83 1345

Nuclide	Plant	EG&G
^{85m}Kr	3.8 ± 0.1 (-5)	3.69 ± 0.04(-5)
^{87}Kr	9.8 ± 0.3 (-5)	1.08 ± 0.02(-4)
^{88}Kr	1.05 ± 0.04(-4)	1.03 ± 0.01(-4)
^{133}Xe	4.8 ± 0.2 (-5)	5.3 ± 0.2 (-5)
^{135}Xe	1.84 ± 0.03(-4)	1.83 ± 0.02(-4)

Plant Iodine Charcoal Cartridge

(μCi/cc)

Date	Nuclide	Plant	EG&G
5/17/82	^{131}I	7.1 ± 0.1 (-12)	6.1 ± 0.1 (-12)
	^{133}I	1.19 ± 0.06(-11)	1.02 ± 0.03(-11)
5/24/82	^{131}I	9.3 ± 0.2 (-12)	7.7 ± 0.1 (-12)
	^{133}I	1.75 ± 0.09(-11)	1.97 ± 0.04(-11)
7/05/82	^{131}I	3.18 ± 0.08(-12)	2.80 ± 0.07(-12)
11/01/82	^{131}I	2.34 ± 0.04(-11)	2.10 ± 0.02(-11)
	^{133}I	7.2 ± 0.1 (-11)	6.7 ± 0.2 (-11)
11/08/82	^{131}I	1.09 ± 0.06(-11)	1.01 ± 0.02(-11)
	^{133}I	4.74 ± 0.09(-11)	4.19 ± 0.06(-11)
	^{135}I	6.5 ± 0.3 (-11)	6.0 ± 0.3 (-11)

TABLE A.2

COMPARISON OF BRUNSWICK AND EG&G RESULTS OF REACTOR COOLANT SAMPLES

Nuclide	CP&L 4/23/82 1634	EG&G 4/23/82 1644	CP&L 4/29/82 1333	EG&G 4/29/82 1500
^{131}I	3.0 ± 0.3 (-3)	2.67 ± 0.03(-3)	1.21 ± 0.04(-3)	1.06 ± 0.02(-3)
^{132}I	6.7 ± 0.1 (-2)	6.64 ± 0.05(-2)	7.0 ± 0.1 (-3)	6.20 ± 0.02(-3)
^{133}I	3.52 ± 0.06(-2)	3.3 ± 0.1 (-2)	*	1.8 ± 0.6 (-5)
^{134}I	2.06 ± 0.04(-1)	1.95 ± 0.01(-1)	*	< 2 (-5)
^{135}I	8.0 ± 0.2 (-2)	7.70 ± 0.07(-2)	*	< 3 (-5)
^{134}Cs	*	5.0 ± 0.1 (-5)	1.39 ± 0.06(-3)	1.09 ± 0.02(-3)
^{137}Cs	*	6.8 ± 0.2 (-5)	1.32 ± 0.04(-3)	1.22 ± 0.02(-3)
^{24}Na	3.76 ± 0.08(-2)	3.55 ± 0.06(-2)	*	< 3 (-6)
^{51}Cr	4.0 ± 0.3 (-2)	3.59 ± 0.04(-2)	*	3.4 ± 0.4 (-4)
^{54}Mn	4.5 ± 0.4 (-3)	9.0 ± 0.3 (-5)	1.51 ± 0.05(-3)	1.41 ± 0.03(-3)
^{56}Mn	5.4 ± 0.1 (-2)	1.8 ± 0.3 (-3)	*	< 2 (-5)
^{58}Co	2.5 ± 0.3 (-3)	1.4 ± 0.2 (-4)	1.23 ± 0.04(-3)	6.6 ± 0.9 (-4)
^{60}Co	9 ± 2 (-4)	2.36 ± 0.03(-4)	2.84 ± 0.07(-3)	2.40 ± 0.02(-3)
^{91}Sr	8 ± 1 (-3)	9.4 ± 0.3 (-3)	*	< 4 (-5)
^{95}Nb	< 5 (-4)	< 7 (-6)	*	< 2 (-5)
^{139}Ba	4.3 ± 0.4 (-2)	3.08 ± 0.04(-2)	*	< 4 (-5)

* Not reported.

In order to use the lower limit of detection (i.e., less-than values) in further calculations, one must be aware of certain problems facing the user. These problems are:

(1) When calculating decontamination factors (DFs) with a less-than in the denominator and a real number in the numerator, the resultant DF is a greater-than. If the numerator is a less-than with a real number in the denominator, the resultant DF is a less-than. If both the numerator and the denominator are less-thans, then the result is indeterminate and the DF cannot be calculated.

(2) When calculating averages with less-thans as some or all of the data, one can only calculate a minimum value (taking the less-than at a value of zero) and the range in which the average will fall. The reporting format is:

Smallest Real Value $\leq$ Average $<$ Largest Value

(3) When calculating averages with greater-thans as some or all of the data, one can only calculate the minimum value for the average, using the greater-thans at value. The reporting format is:

Smallest Real Value $\leq$ Average

(4) When calculating averages with both less-thans and greater-thans as some or all of the data, one can only calculate the minimum value for the average taking the greater-thans at value and the less-thans at Zero. The reporting format is:

Smallest Real Value $\leq$ Average

(5) There are a few cases when a very large less-than was computed for a given sample. These large less-thans have been excluded from the calculation of the maximum value for the averages whenever they meet the criteria for outliers as provided by the Dixon Outlier Test (Reference 18). These large less-thans would bias the maximum value for the average at an inordinately high value if they were used.

Average values for some locations have been time weighted. For example, the average ^{131}I concentration in the reactor coolant was time weighted to calculate the normalizing factors used to calculate gaseous releases. The formula used to weight the average is:

$$\bar{X} = \frac{\sum_i X_i W_i}{\sum_i W_i}$$

where

$\overline{X}$ = weighted average

X_i = individual value

W_i = number of days this value represents

The program used to calculate the weighting factor assumes that a sample value is valid from the time of the last sample to the time of the given sample.

A.3 Fuel Integrity Analysis

A.3.1 Theoretical Basis

References 11, 12, and 19 discuss techniques for evaluation of fuel integrity in operating PWRs and BWRs, that are similar to the method outlined here. Three mechanisms of fission product release are evaluated: (1) a recoil release from fissioning of tramp uranium deposited on the fuel cladding and the reactor internals, (2) a diffusion release of fission products from fuel pellets that gets into the reactor coolant through large cladding defects, (3) an equilibrium release through miniscule defects in the cladding.

A recoil release presents fission product activity to the reactor coolant with no time delay, and thus the long-lived and short-lived volatile and soluble fission products appear to have the same source term. If a fission source term is calculated by correcting the coolant concentrations for coolant volume, fission yield, clean-up through the clean-up system, and decay, the long- and short-lived iodines and fission gases all have the same fission source term. The equilibrium type releaseuresults when a sufficient time delay exists between the fission event and the time of release of the mixture of fission gases and volatile species from the fuel to the coolant for the radiogases to reach equilibrium lev els in the fuel. The recoil and equilibrium mixtures are the two extremes of the mixture spectrum that is physically possible. The intermediate decay mixture has been termed the "diffusion" mixture. It is merely the mid closeup point between the two extremes. Therefore, the diffusion release is defined as $\lambda^{0.5}$.

The referenced methods require calculation of the japparent fission source giving rise to each nuclide of interest. It can be shown that:

$$K * \frac{A_i}{y_i \lambda_i} = \frac{\text{fissions}}{\text{sec}} = \text{the apparent fission source term supporting production of the ith nuclide}$$

where

$K = 3.7 \times 10^4 \left(\frac{\text{atoms/s}}{\mu\text{Ci}}\right)$.

A_i = μCi of nuclide i deposited in the primary/s.

y_i = fission yield of the ith nuclide (atoms/fission).

λ_i = decay constant of the ith nuclide (s^{-1}).

A_i can be evaluated from source term measurements as

$$A_i = (C_i)\ (V_p)\ (\lambda_i + \beta_i)$$

where:

C_i = $\mu Ci/cm^3$ of ith nuclide in reactor coolant

V_p = reactor coolant volume in cm^3

β_i = correction for reactor water cleanup (s^{-1}).

Empirical relationships between the apparent fission source $\left(\frac{A}{Y\lambda}\right)$ and the decay constant (λ) have been determined (11). These relationships quantify the time dependence of the fission product release from recoil, diffusion, and equilibrium mechanisms. The relationships are:

$$\frac{A_i}{y_i\ \lambda_i} = k\lambda^{-b} \qquad (1)$$

where

b = 0.0 for recoil releases

b = 0.5 for "diffusion" releases

b = 1 for equilibrium releases

k = a constant, the value of which changes for the various release modes.

Note that by taking logarithms and rearranging equation (1), one finds

$$\ln\left(\frac{A_i}{y_i\ \lambda_i}\right) = \ln k + (-b)\ \ln \lambda, \qquad (2)$$

which is a linear equation of the general form $y = a + bx$.

In application, the evaluation technique requires the measurement of reactor coolant concentrations of the iodine isotopes, calculation of $\frac{A_i}{y_i \lambda_i}$ for each isotope, and the calculation of b from a linear least squares fit of $\ln(\frac{A_i}{y_i \lambda_i})$ versus $\ln\lambda_i$. For pure recoil releases b = 0, for pure diffusion releases b = 0.5, and for pure equilibrium releases b = 1.0. Seldom are the release modes so clear cut. Usually b values reflect a mixture of release modes. The method is empirical and approximate and its reliability can be improved by analysis of the results from a number of reactor coolant samples.

A.3.2 Calculations for Brunswick

Least squares fits to equation (2) were made using radioiodine concentrations and measured during three steady-state power periods for Unit No. 2 and two steady-state power periods for Unit No. 1. Resulting values of b for Unit No. 2 were 1.01(-1), -6.06(-2), and 5.63(-2) for the time periods April 11 to 20, 1982, October 24, 1982, and December 12, 1982 to January 12, 1983, respectively. The negative b value for October 24, 1982 may be due to the lack of sufficient prior steady-state power, i.e., 3 days. The b values for Unit No. 1 were 5.05(-2) and 4.85(-2) for the time periods March 30, 1982 to May 25, 1982 and November 3, 1982. These values indicate that the naim contributor to the fission

from fissioning of uranium suspended in the coolant or plated on the surfaces of fuel rods or other internal components of the core in both Unit No. 1 and Unit No. 2.

Defective fuel analysis, as performed by Mayer,[12] uses the ratio of $^{131}I/^{133}I$ or $^{131}I/^{135}I$. The resultant ratio is used as an indicator of fuel integrity, with a low value indicating a recoil mechanism, a ratio equal to 1 indicates an equilibrium mechanism, and an intermediate value indicating a diffusion mechanism. Calculated ratios for the different time periods in both units are listed below.

Unit No. 1	$^{131}I/^{133}I$	$^{131}I/^{135}I$
3/30-5/25/82	7.3(-2)	8.2(-2)
11/3/82	3.2(-2)	5.1(-2)
Unit No. 2		
4/11-4/20/82	8.2(-2)	3.6(-2)
10/24/82	1.1(-1)	6.1(-2)
12/12/82-1/12/83	6.2(-2)	7.4(-2)

These values indicate that the main contributor to the fission products inventory in the reactor coolant was from recoil releases in both units.

Table B.3-1
JNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0901	3-30-82 1617	4-5-82 1532	4-12-82 1616	4-21-82 1400
^{84}Br	<4(-4)	<2(-4)	<3(-4)	<9(-4)	<2(-4)
^{131}I	6.1 ± 0.9 (-6)	7 ± 1 (-6)	<3(-5)	7 ± 1 (-6)	5 ± 1 (-6)
^{132}I	2.6 ± 0.1 (-4)	2.8 ± 0.1 (-4)	2.40 ± 0.09(-4)	4.0 ± 0.3 (-4)	2.7 ± 0.2 (-4)
^{133}I	7.5 ± 0.3 (-5)	8.5 ± 0.4 (-5)	7.9 ± 0.6 (-5)	1.02 ± 0.04(-4)	9 ± 1 (-5)
^{134}I	5.8 ± 0.4 (-4)	7.7 ± 0.4 (-4)	6.0 ± 0.3 (-4)	7.9 ± 0.9 (-4)	7.4 ± 0.5 (-4)
^{135}I	2.2 ± 0.3 (-4)	1.7 ± 0.4 (-4)	2.3 ± 0.4 (-4)	3.1 ± 0.8 (-4)	<3(-4)
^{88}Rb	<7(-4)	<5(-4)	<7(-4)	<3(-3)	<1(-3)
^{89}Rb	<3(-4)	4 ± 1 (-4)	<3(-4)	<9(-4)	<8(-4)
^{134}Cs	<9(-7)	<7(-7)	<6(-6)	<7(-7)	<9(-7)
^{136}Cs	<2(-6)	<2(-6)	<2(-5)	<2(-6)	<2(-6)
^{137}Cs	<9(-7)	<2(-6)	<9(-6)	<1(-6)	7 ± 3 (-7)
^{138}Cs	9 ± 4 (-5)	1.7 ± 0.3 (-4)	8 ± 2 (-5)	<4(-4)	<3(-4)
^{139}Cs	<4(-3)	<6(-3)	<6(-3)	<2(-2)	<6(-3)
^{24}Na	2.15 ± 0.01(-2)	2.07 ± 0.02(-2)	2.15 ± 0.02(-2)	3.28 ± 0.05(-2)	3.17 ± 0.05(-2)
^{51}Cr	1.9 ± 0.1 (-2)	2.00 ± 0.01(-2)	1.71 ± 0.01(-2)	1.53 ± 0.01(-2)	1.30 ± 0.01(-2)
^{54}Mn	1.38 ± 0.04(-4)	1.30 ± 0.01(-4)	8.6 ± 0.4 (-5)	7.1 ± 0.1 (-5)	1.11 ± 0.01(-4)
^{56}Mn	5.2 ± 0.6 (-4)	9.3 ± 0.2 (-4)	1.07 ± 0.02(-3)	<4(-4)	1.63 ± 0.05(-3)
^{59}Fe	<4(-6)	8.[illegible] ± 0.6 (-6)	<2(-5)	1.5 ± 0.4 (-6)	5.3 ± 0.5 (-6)
^{57}Co	<7(-7)	<[illegible](-6)	<3(-6)	<7(-7)	<9(-7)

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time				
	3-17-82 0901	3-30-82 1617	4-5-82 1532	4-12-82 1616	4-21-82 1400
^{58}Co	1.13 ± 0.05(-4)	5.06 ± 0.08(-5)	1.06 ± 0.04(-4)	9 ± 2 (-5)	1.03 ± 0.01(-4)
^{60}Co	1.06 ± 0.04(-4)	6.91 ± 0.09(-5)	9.3 ± 0.3 (-5)	7.4 ± 0.1 (-5)	9.5 ± 0.1 (-5)
^{65}Zn	6.3 ± 0.7 (-6)	6.1 ± 0.7 (-6)	<3(-5)	4 ± 1 (-6)	1.2 ± 0.1 (-5)
^{91}Sr	6 ± 3 (-5)	<9(-5)	<8(-5)	<2(-4)	2.0 ± 0.6 (-4)
^{91m}Y	<5(-5)	<7(-5)	<5(-5)	<7(-5)	<6(-5)
^{93}Y	<1(-4)	<3(-4)	<3(-4)	<3(-4)	<3(-4)
^{95}Zr	<2(-6)	<2(-6)	<2(-5)	<2(-6)	<3(-6)
^{95}Nb	<2(-6)	<2(-6)	<9(-6)	<7(-7)	<7(-7)
^{99}Mo	2.1 ± 0.1 (-4)	1.34 ± 0.09(-4)	1.0 ± 0.2 (-4)	1.9 ± 0.1 (-4)	9 ± 2 (-5)
^{103}Ru	<2(-6)	<2(-6)	<6(-6)	<8(-7)	<8(-7)
^{106}RuD	<9(-6)	<9(-6)	<5(-5)	<9(-6)	<2(-5)
^{110m}Ag	2.09 ± 0.03(-5)	2.57 ± 0.08(-5)	2.0 ± 0.2 (-5)	2.1 ± 0.2 (-5)	3.6 ± 0.2 (-5)
^{124}Sb	<2(-6)	<8(-7)	<2(-5)	<5(-7)	<7(-7)
^{125}Sb	<2(-6)	<4(-6)	<1(-5)	<2(-6)	<2(-6)
^{129m}Te	<2(-5)	<8(-6)	<6(-5)	<7(-6)	<8(-6)
^{129}Te	<5(-4)	<5(-4)	<5(-4)	<1(-3)	<8(-4)
^{131m}Te	<4(-5)	<5(-5)	<6(-5)	<5(-5)	<1(-4)
^{131}Te	<4(-4)	<4(-4)	<3(-4)	<9(-4)	<7(-4)
^{132}Te	<2(-6)	<3(-6)	<5(-6)	<3(-6)	<3(-6)
^{139}Ba	1.4 ± 0.6 (-4)	<2(-4)	8 ± 3 (-5)	<4(-4)	<2(-4)
^{140}Ba	<5(-6)	<4(-6)	<3(-5)	<5(-6)	<6(-6)

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0901	3-30-82 1617	4-5-82 1532	4-12-82 1616	4-21-82 1400
^{140}La	<5(-6)	2.8 ± 0.5 (-5)	<2(-5)	<1(-5)	<2(-5)
^{141}Ce	<3(-6)	<4(-6)	<5(-6)	<2(-6)	<2(-6)
^{143}Ce	6 ± 2 (-6)	<2(-5)	1.3 ± 0.6 (-5)	<1(-5)	1.2 ± 0.5 (-5)
^{144}Ce	<6(-6)	<2(-5)	<5(-5)	<9(-6)	<4(-6)
^{152}Eu	<2(-6)	<2(-6)	<8(-6)	<2(-6)	<1(-6)
^{154}Eu	<2(-6)	<2(-6)	<4(-5)	<2(-6)	<2(-6)
^{155}Eu	<5(-6)	<3(-6)	<2(-5)	<2(-6)	<2(-6)
^{187}W	<2(-5)	<3(-5)	<4(-5)	<3(-5)	<6(-5)
^{239}Np	<6(-6)	<2(-5)	<2(-5)	<2(-5)	<3(-5)

Table 8.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 5-25-82 1307	5-31-82 1119	6-7-82 1054	6-8-82 1022	7-1-82 0935	7-7-82 0945
^{84}Br	<7(-4)	<2(-4)	<3(-4)	<1(-3)	<5(-4)	<6(-4)
^{131}I	6.9 ± 0.9 (-6)	7.1 ± 0.7 (-6)	1.0 ± 0.2 (-5)	<2(-5)	1.8 ± 0.1 (-5)	1.4 ± 0.2 (-5)
^{132}I	2.6 ± 0.1 (-4)	2.5 ± 0.1 (-4)	1.5 ± 0.2 (-4)	1.1 ± 0.1 (-4)	2.2 ± 0.6 (-4)	3.4 ± 0.3 (-4)
^{133}I	9.3 ± 0.2 (-5)	1.05 ± 0.07(-4)	2.2 ± 0.1 (-4)	5.9 ± 0.9 (-5)	2.3 ± 0.1 (-4)	1.65 ± 0.09(-4)
^{134}I	5.3 ± 0.4 (-4)	6.4 ± 0.3 (-4)	1.25 ± 0.04(-3)	1.01 ± 0.07(-3)	9 ± 1 (-4)	8.4 ± 0.5 (-4)
^{135}I	2.3 ± 0.5 (-4)	2.7 ± 0.3 (-4)	3.2 ± 0.9 (-4)	<7(-5)	<5(-4)	<4(-4)
^{88}Rb	<8(-3)	<3(-3)	<9(-4)	<2(-2)	<5(-3)	<9(-4)
^{89}Rb	<5(-3)	7 ± 3 (-4)	<5(-4)	<2(-2)	<3(-3)	<4(-4)
^{134}Cs	<2(-6)	<2(-6)	<4(-6)	<3(-5)	1.1 ± 0.5 (-6)	<2(-6)
^{137}Cs	<3(-6)	<9(-7)	<4(-6)	<2(-5)	1.5 ± 0.4 (-6)	<3(-6)
^{138}Cs	<3(-4)	<2(-4)	1.7 ± 0.4 (-4)	<5(-4)	<5(-4)	1.9 ± 0.5 (-4)
^{139}Cs	*	<2(-2)	<5(-3)	*	<4(-2)	<3(-3)
^{24}Na	2.50 ± 0.02(-2)	2.56 ± 0.04(-2)	8.10 ± 0.09(-2)	1.74 ± 0.02(-2)	2.04 ± 0.03(-1)	6.65 ± 0.01(-2)
^{51}Cr	1.07 ± 0.01(-2)	8.22 ± 0.04(-3)	2.15 ± 0.03(-2)	1.66 ± 0.04(-3)	1.73 ± 0.02(-2)	8.26 ± 0.07(-3)
^{54}Mn	1.25 ± 0.02(-4)	3.60 ± 0.03(-4)	7.2 ± 0.1 (-4)	4.08 ± 0.07(-3)	7.0 ± 0.6 (-5)	4.32 ± 0.06(-4)
^{56}Mn	8.9 ± 0.2 (-4)	1.80 ± 0.02(-3)	1.03 ± 0.04(-3)	1.01 ± 0.01(-2)	9.0 ± 0.6 (-4)	<5(-4)
^{59}Fe	<3(-6)	4.8 ± 0.1 (-5)	4.45 ± 0.08(-4)	<4(-5)	2.3 ± 0.1 (-5)	2.2 ± 0.2 (-5)
^{57}Co	<1(-6)	<7(-7)	<3(-6)	<8(-6)	<2(-6)	1.3 ± 0.4 (-6)
^{58}Co	1.32 ± 0.02(-4)	2.58 ± 0.02(-4)	1.7 ± 0.1 (-4)	1.57 ± 0.03(-3)	2.6 ± 0.1 (-5)	3.84 ± 0.05(-4)

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 5-25-82 1307	5-31-82 1119	6-7-82 1054	6-8-82 1022	7-1-82 0935	7-7-82 0945
^{60}Co	1.30 ± 0.02(-4)	2.53 ± 0.02(-4)	4.07 ± 0.06(-4)	1.65 ± 0.01(-3)	4.1 ± 0.1 (-5)	4.26 ± 0.05(-4)
^{65}Zn	6 ± 2 (-6)	6 ± 1 (-6)	1.0 ± 0.4 (-5)	<2(-4)	<3(-6)	4 ± 2 (-6)
^{91}Sr	<8(-5)	<2(-4)	<3(-4)	1.0 ± 0.3 (-4)	<4(-4)	4 ± 2 (-4)
^{91m}Y	<2(-4)	<8(-5)	<8(-5)	<4(-5)	<2(-4)	<2(-4)
^{93}Y	<2(-4)	<2(-4)	<5(-4)	<2(-4)	<1(-3)	<6(-4)
^{95}Zr	<3(-6)	<3(-6)	<8(-6)	<3(-5)	<3(-6)	<3(-6)
^{95}Nb	<2(-6)	<9(-7)	<4(-6)	<2(-5)	<7(-7)	<2(-6)
^{99}Mo	1.25 ± 0.08(-4)	9.9 ± 0.8 (-5)	<3(-4)	<2(-4)	1.0 ± 0.2 (-4)	<2(-4)
^{103}Ru	<2(-6)	<2(-6)	<5(-6)	<2(-5)	<8(-7)	<3(-6)
^{106}RuD	<2(-5)	<2(-5)	<4(-5)	<2(-4)	<2(-5)	<3(-5)
^{110m}Ag	1.4 ± 0.1 (-5)	1.26 ± 0.08(-5)	1.15 ± 0.03(-4)	<2(-4)	2.1 ± 0.4 (-5)	1.2 ± 0.3 (-5)
^{124}Sb	<4(-6)	<2(-6)	<9(-6)	<4(-5)	<2(-6)	<2(-6)
^{125}Sb	<2(-6)	<3(-6)	<1(-5)	<3(-5)	<2(-6)	<3(-5)
^{129m}Te	<2(-5)	<2(-5)	<4(-5)	<3(-4)	<7(-6)	<2(-5)
^{129}Te	<6(-4)	<3(-4)	<5(-4)	<7(-4)	<1(-3)	<1(-3)
^{131m}Te	<3(-5)	<4(-5)	<2(-4)	<8(-5)	<2(-4)	<9(-5)
^{131}Te	<2(-3)	<6(-4)	<3(-4)	<3(-3)	<1(-3)	<4(-4)
^{132}Te	<2(-6)	<3(-6)	<2(-5)	<9(-6)	<4(-6)	<4(-6)
^{139}Ba	7 ± 2 (-5)	6 ± 2 (-5)	<2(-4)	<6(-5)	<3(-4)	<2(-4)
^{140}Ba	<6(-6)	<9(-6)	<3(-5)	<8(-5)	<5(-6)	<7(-6)
^{140}La	<9(-8)	<6(-6)	<6(-5)	<2(-5)	<3(-5)	<2(-5)

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 5-25-82 1307	5-31-82 1119	6-7-82 1054	6-8-82 1022	7-1-82 0935	7-7-82 0945
^{141}Ce	1.8 ± 0.7 (-6)	<3(-6)	<8(-6)	<2(-5)	<4(-6)	<2(-6)
^{143}Ce	<7(-6)	<7(-6)	<7(-5)	<2(-5)	<3(-5)	1.7 ± 0.8 (-5)
^{144}Ce	<6(-6)	<5(-6)	<3(-5)	<2(-4)	<7(-6)	<9(-6)
^{152}Eu	<3(-6)	<2(-6)	<7(-6)	<3(-5)	<2(-6)	<3(-6)
^{154}Eu	<3(-6)	<2(-6)	<4(-6)	<5(-5)	<2(-6)	<3(-6)
^{155}Eu	<4(-6)	<3(-6)	<6(-6)	<4(-5)	<3(-6)	<3(-6)
^{187}W	<3(-5)	5 ± 1 (-5)	<2(-4)	<7(-5)	<2(-4)	<7(-5)
^{239}Np	<2(-5)	<9(-6)	<9(-5)	<4(-5)	<2(-5)	<3(-5)

* Radionuclide not measured.

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 10-10-82 0119
^{84}Br	<2(-5)
^{131}I	<2(-6)
^{132}I	<2(-6)
^{133}I	<3(-6)
^{134}I	1.38 ± 0.03(-4)
^{135}I	<3(-6)
^{88}Rb	<3(-5)
^{89}Rb	<7(-5)
^{134}Cs	<2(-6)
^{136}Cs	<3(-6)
^{137}Cs	<2(-6)
^{138}Cs	<5(-6)
^{139}Cs	<1(-3)
^{24}Na	2.4 ± 0.3 (-6)
^{51}Cr	3.02 ± 0.06(-4)
^{54}Mn	5.10 ± 0.07(-4)
^{56}Mn	2.53 ± 0.04(-4)
^{59}Fe	6.3 ± 0.1 (-5)

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 10-10-82 0119
^{57}Co	<1(-6)
^{58}Co	8.2 ± 0.1 (-5)
^{60}Co	5.42 ± 0.03(-4)
^{65}Zn	1.1 ± 0.2 (-5)
^{91}Sr	<1(-5)
^{91m}Y	<3(-6)
^{93}Y	<2(-5)
^{95}Zr	<4(-6)
^{95}Nb	<3(-6)
^{99}Mo	<2(-5)
^{103}Ru	<2(-6)
^{106}RuD	<2(-5)
^{110m}Ag	<6(-5)
^{124}Sb	1.4 ± 0.6 (-6)
^{125}Sb	<4(-6)
^{129m}Te	<3(-5)
^{129}Te	<3(-5)
^{131m}Te	<8(-6)
^{131}Te	<4(-5)
^{132}Te	<1(-6)

Table B.3-1 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 10-10-82 0119
^{139}Ba	<2(-5)
^{140}Ba	<5(-6)
^{140}La	<8(-7)
^{141}Ce	<2(-6)
^{143}Ce	<2(-6)
^{144}Ce	<9(-6)
^{152}Eu	<3(-6)
^{154}Eu	<4(-6)
^{155}Eu	<3(-6)
^{187}W	<6(-6)
^{239}Np	<4(-6)

Table B.3-2
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1056

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<2(-3)	a	<3(-4)
^{131}I	<4(-7)	7 ± 2 (-6)	7 ± 2 (-6)	1.0 ± 0.2 (-5)
^{132}I	<4(-6)	2.1 ± 0.3 (-4)	2.1 ± 0.3 (-4)	1.5 ± 0.2 (-4)
^{133}I	6 ± 2 (-7)	1.8 ± 0.1 (-4)	1.8 ± 0.1 (-4)	2.2 ± 0.1 (-4)
^{134}I	<1(-3)	2.3 ± 0.1 (-3)	a	1.25 ± 0.04(-3)
^{135}I	<5(-6)	4.7 ± 0.7 (-4)	4.7 ± 0.7 (-4)	3.2 ± 0.9 (-4)
^{134}Cs	<6(-7)	<4(-6)	a	<4(-6)
^{137}Cs	<4(-7)	<5(-6)	a	<4(-6)
^{138}Cs	*	<9(-4)	a, *	1.7 ± 0.4 (-4)
^{24}Na	7.7 ± 0.1 (-4)	7.72 ± 0.08(-2)	7.80 ± 0.08(-2)	8.10 ± 0.09(-2)
^{51}Cr	5.2 ± 0.1 (-4)	2.33 ± 0.03(-2)	2.38 ± 0.08(-2)	2.15 ± 0.03(-2)
^{54}Mn	3.86 ± 0.03(-4)	5.2 ± 0.2 (-4)	9.0 ± 0.2 (-4)[b]	7.2 ± 0.1 (-4)
^{56}Mn	2.01 ± 0.05(-4)	4.4 ± 0.2 (-4)	6.4 ± 0.2 (-4)[b]	1.03 ± 0.04(-3)
^{59}Fe	2.54 ± 0.04(-4)	2.91 ± 0.06(-4)	5.45 ± 0.06(-4)[b]	4.45 ± 0.08(-4)
^{58}Co	8.39 ± 0.08(-5)	1.1 ± 0.1 (-4)	2.0 ± 0.1 (-4)	1.7 ± 0.1 (-4)
^{60}Co	2.35 ± 0.02(-4)	2.49 ± 0.09(-4)	4.84 ± 0.09(-4)[b]	4.07 ± 0.06(-4)
^{65}Zn	7.4 ± 0.6 (-6)	<9(-6)	a	1.0 ± 0.4 (-5)
^{91}Sr	<4(-6)	<2(-4)	a	<3(-4)
^{91m}Y	<2(-6)	<4(-4)	a	<8(-5)

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1056

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{95}Zr	<3(-6)	<6(-6)	a	<8(-6)
^{95}Nb	1.4 ± 0.2 (-6)	<6(-6)	a	<4(-6)
^{99}Mo	<4(-6)	<2(-4)	a	<3(-4)
^{103}Ru	<5(-7)	4 ± 1 (-6)	a	<5(-6)
^{110m}Ag	1.61 ± 0.05(-5)	9.3 ± 0.2 (-5)	1.09 ± 0.02(-4)	1.15 ± 0.03(-4)
^{124}Sb	2.8 ± 0.2 (-6)	6 ± 2 (-6)	9 ± 2 (-6)	<9(-6)
^{139}Ba	<3(-5)	<2(-4)	a	<2(-4)
^{140}Ba	<2(-6)	<3(-5)	a	<3(-5)
^{140}La	<8(-7)	<3(-5)	a	<6(-5)
^{141}Ce	<6(-7)	<2(-5)	a	<8(-6)
^{143}Ce	<7(-7)	<4(-5)	a	<7(-5)
^{187}W	1.2 ± 0.1 (-5)	<8(-5)	a	<2(-4)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 6/8/82
Time: 1024

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<1(-3)
^{131}I	<2(-7)	6 ± 2 (-6)	6 ± 2 (-6)	<2(-5)
^{132}I	*	<5(-3)	*	1.1 ± 0.1 (-4)
^{133}I	<1(-6)	6 ± 1 (-5)	6 ± 1 (-5)	5.9 ± 0.9 (-5)
^{134}I	*	*	*	1.01 ± 0.07(-3)
^{135}I	3 ± 1 (-5)	<2(-4)	a	<7(-5)
^{134}Cs	<7(-7)	<6(-6)	a	<3(-5)
^{137}Cs	1.0 ± 0.1 (-6)	<7(-6)	a	<2(-5)
^{138}Cs	*	*	*	<5(-4)
^{24}Na	2.02 ± 0.03(-4)	1.63 ± 0.02(-2)	1.65 ± 0.02(-2)	1.74 ± 0.02(-2)
^{51}Cr	6.2 ± 0.1 (-5)	1.47 ± 0.03(-3)	1.53 ± 0.03(-3)	1.66 ± 0.04(-3)
^{54}Mn	8.4 ± 0.1 (-5)	4.09 ± 0.08(-3)	4.17 ± 0.08(-3)	4.08 ± 0.07(-3)
^{56}Mn	*	1.3 ± 0.1 (-2)	*	1.01 ± 0.01(-2)
^{59}Fe	1.08 ± 0.03(-5)	<2(-5)	a	<4(-5)
^{58}Co	5.30 ± 0.07(-5)	1.55 ± 0.03(-3)	1.60 ± 0.03(-3)	1.57 ± 0.03(-3)
^{60}Co	6.09 ± 0.08(-5)	1.59 ± 0.02(-3)	1.65 ± 0.02(-3)	1.65 ± 0.01(-3)
^{65}Zn	2.0 ± 0.3 (-6)	<3(-5)	a	<2(-4)
^{91}Sr	<2(-5)	<2(-4)	a	1.0 ± 0.3 (-4)
^{91m}Y	*	*	*	<4(-5)

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 6/8/82
Time: 1024

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{95}Zr	<7(-7)	<1(-5)	a	<3(-5)
^{95}Nb	<8(-7)	<4(-6)	a	<2(-5)
^{99}Mo	<2(-6)	<7(-5)	a	<2(-4)
^{103}Ru	<4(-7)	<6(-6)	a	<2(-5)
^{110m}Ag	6.8 ± 0.2 (-6)	3.7 ± 0.2 (-5)	4.4 ± 0.2 (-5)	<2(-4)
^{124}Sb	<6(-7)	<2(-5)	a	<4(-5)
^{139}Ba	*	*	*	<6(-5)
^{140}Ba	<2(-6)	2.4 ± 0.9 (-5)	2.5 ± 0.9 (-5)	<8(-5)
^{140}La	1.0 ± 0.2 (-6)	<1(-5)	a	<2(-5)
^{141}Ce	<2(-7)	<5(-6)	a	<2(-5)
^{143}Ce	<7(-7)	<1(-5)	a	<2(-5)
^{187}W	4 ± 1 (-6)	<4(-5)	a	<7(-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 7/1/82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<5(-4)
^{131}I	<3(-7)	1.6 ± 0.1 (-5)	1.6 ± 0.1 (-5)	1.8 ± 0.1 (-5)
^{132}I	*	*	*	2.2 ± 0.6 (-4)
^{133}I	<2(-5)	1.9 ± 0.2 (-4)	2.0 ± 0.2 (-4)	2.3 ± 0.1 (-4)
^{134}I	*	*	*	9 ± 1 (-4)
^{135}I	*	*	*	4 ± 2 (-4)
^{134}Cs	<3(-7)	<2(-6)	a	1.1 ± 0.4 (-6)
^{137}Cs	4 ± 1 (-7)	<4(-6)	a	1.5 ± 0.4 (-6)
^{138}Cs	*	*	*	<5(-4)
^{24}Na	2.08 ± 0.08(-3)	1.80 ± 0.03(-1)	1.82 ± 0.03(-1)[b]	2.06 ± 0.02(-1)
^{51}Cr	4.3 ± 0.1 (-5)	1.69 ± 0.01(-2)	1.69 ± 0.01(-2)	1.73 ± 0.02(-2)
^{54}Mn	3.11 ± 0.05(-5)	3.1 ± 0.1 (-5)	6.2 ± 0.2 (-5)	7.0 ± 0.6 (-5)
^{56}Mn	*	*	*	9.0 ± 0.6 (-4)
^{59}Fe	2.20 ± 0.05(-5)	<9(-6)	a	2.3 ± 0.1 (-5)
^{58}Co	9.0 ± 0.4 (-6)	1.1 ± 0.1 (-5)	2.0 ± 0.1 (-5)[b]	2.6 ± 0.1 (-5)
^{60}Co	1.69 ± 0.04(-5)	1.2 ± 0.1 (-5)	2.9 ± 0.1 (-5)[b]	4.1 ± 0.1 (-5)
^{65}Zn	<2(-6)	<9(-6)	a	<3(-6)
^{91m}Y	*	*	*	<2(-4)
^{95}Zr	<5(-7)	<5(-6)	a	<3(-6)

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 7-1-82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{95}Nb	<3(-7)	<2(-6)	a	<7(-7)
^{99}Mo	<7(-6)	1.6 ± 0.2 (-4)	1.6 ± 0.2 (-4)	1.0 ± 0.2 (-4)
^{103}Ru	<6(-7)	<2(-6)	a	<8(-7)
^{110m}Ag	3.2 ± 0.2 (-6)	1.6 ± 0.1 (-5)	1.9 ± 0.1 (-5)	2.1 ± 0.4 (-5)
^{124}Sb	<6(-7)	<5(-6)	a	<2(-6)
^{139}Ba	*	*	*	<3(-4)
^{140}Ba	<2(-6)	<8(-6)	a	<5(-6)
^{140}La	<3(-6)	<2(-5)	a	<3(-5)
^{141}Ce	<3(-7)	<3(-6)	a	<4(-6)
^{143}Ce	<5(-6)	<2(-5)	a	<4(-5)
^{187}W	<4(-5)	<1(-4)	a	<2(-4)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0119

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-5)
^{131}I	<2(-7)	<3(-7)	a	<2(-6)
^{132}I	<4(-5)	*	a	<2(-6)
^{133}I	<5(-7)	<2(-6)	a	<3(-6)
^{134}I	*	*	*	1.38 ± 0.03(-4)
^{135}I	<4(-6)	<9(-5)	a	<3(-6)
^{134}Cs	<3(-7)	<4(-7)	a	<2(-6)
^{137}Cs	<4(-7)	<3(-7)	a	<2(-6)
^{138}Cs	*	*	*	<5(-6)
^{24}Na	<2(-7)	2.2 ± 0.2 (-6)	2.2 ± 0.2 (-6)	2.4 ± 0.3 (-6)
^{51}Cr	3.08 ± 0.05(-5)	2.73 ± 0.02(-4)	3.04 ± 0.02(-4)	3.02 ± 0.06(-4)
^{54}Mn	2.57 ± 0.04(-4)	3.01 ± 0.04(-4)	5.58 ± 0.06(-4)[b]	5.10 ± 0.07(-4)
^{56}Mn	<8(-5)	*	a, *	2.53 ± 0.04(-4)
^{59}Fe	5.08 ± 0.07(-5)	1.48 ± 0.03(-5)	6.56 ± 0.08(-5)	6.3 ± 0.1 (-5)
^{57}Co	2.3 ± 0.5 (-7)	3.1 ± 0.6 (-7)	5.4 ± 0.8 (-7)	<1(-6)
^{58}Co	2.18 ± 0.04(-5)	7.2 ± 0.1 (-5)	9.4 ± 0.1 (-5)[b]	8.2 ± 0.1 (-5)
^{60}Co	2.36 ± 0.08(-4)	3.29 ± 0.03(-4)	5.65 ± 0.09(-4)[b]	5.42 ± 0.03(-4)
^{65}Zn	8.0 ± 0.5 (-6)	4.5 ± 0.3 (-6)	1.2 ± 0.6 (-5)	1.1 ± 0.2 (-5)

Table B.3-2 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0119

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{91}Sr	<3(-6)	<3(-5)	a	<1(-5)
^{91m}Y	*	*	*	<3(-6)
^{95}Zr	<8(-7)	<5(-7)	a	<4(-6)
^{95}Nb	<5(-7)	<4(-7)	a	<3(-6)
^{99}Mo	<1(-6)	<3(-6)	a	<2(-5)
^{103}Ru	<3(-7)	<2(-7)	a	<2(-6)
^{110m}Ag	1.7 ± 0.1 (-6)	2.73 ± 0.05(-5)	2.90 ± 0.05(-5)	<6(-5)
^{124}Sb	7.8 ± 0.9 (-7)	5.0 ± 0.6 (-7)	1.3 ± 0.1 (-6)	1.4 ± 0.6 (-6)
^{139}Ba	*	*	*	<2(-5)
^{140}Ba	<2(-6)	<8(-7)	a	<5(-6)
^{140}La	<2(-7)	<2(-7)	a	<8(-7)
^{141}Ce	<3(-7)	<4(-7)	a	<2(-6)
^{143}Ce	<4(-7)	<8(-7)	a	<2(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-3
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	3-14-82 1538	3-17-82 0858	4-5-82 1533	4-12-82 1617	5-4-82 0832	5-5-82 0858
^{84}Br	<3(-4)	<3(-4)	<3(-4)	<3(-4)	*	<5(-4)
^{131}I	7.9 ± 0.5 (-6)	6.5 ± 0.7 (-6)	6.4 ± 0.7 (-6)	8.0 ± 0.8 (-6)	7.0 ± 0.9 (-6)	8 ± 3 (-6)
^{132}I	2.91 ± 0.08(-4)	2.8 ± 0.1 (-4)	2.42 ± 0.07(-4)	3.5 ± 0.2 (-4)	2.6 ± 0.2 (-4)	4.8 ± 0.4 (-4)
^{133}I	1.00 ± 0.05(-4)	8.0 ± 0.2 (-5)	8.4 ± 0.6 (-4)	1.14 ± 0.07(-4)	8.9 ± 0.5 (-5)	9 ± 2 (-5)
^{134}I	6.0 ± 0.2 (-4)	7 ± 3 (-4)	5.8 ± 0.3 (-4)	6.0 ± 0.6 (-4)	4.0 ± 0.5 (-3)	7 ± 1 (-4)
^{135}I	1.7 ± 0.2 (-4)	1.6 ± 0.5 (-4)	1.5 ± 0.3 (-4)	<4 (-4)	2.5 ± 0.3 (-4)	<5(-4)
^{88}Rb	<7(-4)	<2(-3)	<5(-4)	<2(-3)	*	<7(-3)
^{89}Rb	<4(-4)	<7(-4)	<2(-4)	7 ± 3 (-4)	*	<3(-3)
^{134}Cs	<8(-7)	<9(-7)	<9(-7)	<6(-7)	<2(-6)	<5(-6)
^{137}Cs	<1(-6)	<2(-6)	<2(-6)	<1(-6)	<2(-6)	7 ± 2 (-6)
^{138}Cs	2.0 ± 0.3 (-4)	<3(-4)	1.4 ± 0.2 (-4)	<3(-4)	*	<4(-4)
^{139}Cs	<3(-3)	<2(-2)	<5(-3)	<9(-3)	*	<2(-1)
^{24}Na	2.15 ± 0.01(-2)	2.06 ± 0.01(-2)	1.94 ± 0.03(-2)	3.43 ± 0.05(-2)	1.73 ± 0.02(-2)	2.19 ± 0.04(-2)
^{51}Cr	1.49 ± 0.02(-2)	1.69 ± 0.01(-2)	1.64 ± 0.03(-2)	1.52 ± 0.01(-2)	1.46 ± 0.05(-2)	2.10 ± 0.01(-2)
^{54}Mn	2.05 ± 0.04(-4)	8.9 ± 0.3 (-5)	8.6 ± 0.1 (-5)	1.42 ± 0.03(-4)	7.5 ± 0.1 (-5)	6.70 ± 0.06(-3)
^{56}Mn	7.76 ± 0.08(-3)	1.52 ± 0.03(-3)	5 ± 1 (-4)	4.8 ± 0.1 (-3)	2.4 ± 0.3 (-4)	1.26 ± 0.01(-1)
^{59}Fe	4.3 ± 0.1 (-5)	6.5 ± 0.7 (-6)	6.4 ± 0.8 (-6)	2.62 ± 0.08(-5)	<3(-6)	6.68 ± 0.06(-3)
^{57}Co	<9(-7)	<9(-7)	<2(-6)	<7(-7)	<7(-7)	<2(-6)
^{58}Co	1.56 ± 0.03(-4)	5.5 ± 0.1 (-5)	4.2 ± 0.1 (-5)	1.23 ± 0.02(-4)	1.04 ± 0.01(-4)	1.59 ± 0.02(-3)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 3-14-82 1538	3-17-82 0858	4-5-82 1533	4-12-82 1617	5-4-82 0832	5-5-82 0858
^{60}Co	1.42 ± 0.02(-4)	6.25 ± 0.08(-5)	4.1 ± 0.1 (-5)	9.3 ± 0.1 (-5)	9.5 ± 0.1 (-5)	3.30 ± 0.03(-3)
^{65}Zn	1.0 ± 0.2 (-5)	1.1 ± 0.1 (-5)	8 ± 1 (-6)	5.4 ± 0.6 (-6)	3.9 ± 0.9 (-6)	1.43 ± 0.06(-4)
^{91}Sr	<7(-5)	<8(-5)	<8(-5)	<2(-4)	<5(-5)	<4(-4)
^{91m}Y	<4(-5)	<2(-4)	<4(-5)	<2(-4)	2.4 ± 0.5 (-3)	2.2 ± 0.7 (-4)
^{93}Y	<2(-4)	<2(-4)	<2(-4)	<4(-4)	<2(-4)	<6(-4)
^{95}Zr	<1(-6)	<3(-6)	<2(-6)	<2(-6)	<3(-6)	3.5 ± 0.4 (-5)
^{95}Nb	<2(-6)	<8(-7)	<9(-7)	<6(-7)	<1(-6)	3.7 ± 0.4 (-5)
^{99}Mo	1.9 ± 0.1 (-4)	2.02 ± 0.06(-4)	1.2 ± 0.1 (-4)	1.4 ± 0.1 (-4)	1.1 ± 0.1 (-4)	<2(-4)
^{103}Ru	<1(-6)	<2(-6)	<2(-6)	<9(-7)	<2(-6)	<2(-5)
^{106}RuD	<2(-5)	<7(-6)	<9(-6)	<8(-6)	<7(-6)	<7(-5)
^{110m}Ag	2.6 ± 0.1 (-5)	3.69 ± 0.08(-5)	2.45 ± 0.08(-5)	1.5 ± 3 (-5)	1.38 ± 0.06(-5)	2.8 ± 0.3 (-5)
^{124}Sb	1.3 ± 0.5 (-6)	<2(-6)	<4(-6)	<5(-7)	<2(-6)	5.5 ± 0.2 (-5)
^{125}Sb	<2(-6)	<3(-6)	<3(-6)	<2(-6)	<3(-6)	<2(-5)
^{129m}Te	<9(-6)	<2(-5)	<2(-5)	<7(-6)	<9(-6)	<6(-5)
^{129}Te	<3(-4)	<6(-4)	<3(-4)	<9(-4)	<3(-3)	<2(-3)
^{131m}Te	<6(-5)	<2(-5)	<6(-5)	<8(-5)	<4(-5)	<2(-4)
^{131}Te	<3(-4)	<6(-4)	<2(-4)	<6(-4)	*	<3(-3)
^{132}Te	<3(-6)	<3(-6)	<4(-6)	<2(-6)	<3(-6)	<2(-5)
^{139}Ba	1.5 ± 0.3 (-4)	1.7 ± 0.6 (-4)	1.7 ± 0.2 (-4)	<2(-4)	<4(-4)	3.2 ± 0.9 (-4)
^{140}Ba	<6(-6)	<7(-6)	<6(-6)	<6(-6)	<5(-6)	<4(-5)
^{140}La	<2(-5)	<5(-6)	2.5 ± 0.7 (-5)	<2(-5)	<6(-6)	3.4 ± 0.5 (-5)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 3-14-82 1538	3-17-82 0858	4-5-82 1533	4-12-82 1617	5-4-82 0832	5-5-82 0858
^{141}Ce	1.9 ± 0.7 (-6)	<3(-6)	<3(-6)	<2(-6)	<3(-6)	<9(-6)
^{143}Ce	<2(-5)	<5(-6)	1.1 ± 0.5 (-5)	<2(-5)	<2(-5)	<5(-5)
^{144}Ce	<7(-6)	<7(-6)	<8(-6)	<4(-6)	<6(-6)	1.4 ± 0.5 (-5)
^{152}Eu	<2(-6)	<3(-6)	<2(-6)	<1(-6)	<2(-6)	<5(-6)
^{154}Eu	<2(-6)	<2(-6)	<3(-6)	<2(-6)	<2(-6)	<2(-5)
^{155}Eu	<2(-6)	<4(-6)	<5(-6)	<3(-6)	<3(-6)	<1(-5)
^{187}W	<6(-5)	<3(-5)	8 ± 3 (-5)	6 ± 2 (-5)	<5(-5)	2.37 ± 0.07(-3)
^{239}Np	<2(-5)	7 ± 3 (-6)	<2(-5)	<2(-5)	<9(-6)	<5(-5)

* Radionuclide not measured.

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0910	5-13-82 1040
^{84}Br	<6(-2)	<9(-3)	<2(-4)	<8(-5)	<2(-4)	<3(-4)
^{131}I	1.0 ± 0.1 (-5)	4 ± 1 (-6)	8 ± 1 (-6)	2.7 ± 0.9 (-6)	7.1 ± 0.7 (-6)	7.8 ± 0.5 (-6)
^{132}I	2.0 ± 0.9 (-4)	3.9 ± 0.5 (-4)	3.4 ± 0.2 (-4)	2.8 ± 0.1 (-4)	2.9 ± 0.2 (-4)	2.45 ± 0.07(-4)
^{133}I	6 ± 1 (-5)	<7(-5)	<6(-5)	<2(-5)	1.6 ± 0.2 (-4)	1.11 ± 0.05(-4)
^{134}I	<6(-3)	9 ± 4 (-4)	<2(-4)	2.5 ± 0.3 (-4)	7.0 ± 0.5 (-4)	6.1 ± 0.3 (-4)
^{135}I	<2(-4)	<2(-4)	<2(-4)	<8(-5)	3.4 ± 0.7 (-4)	2.7 ± 0.2 (-4)
^{88}Rb	*	*	<2(-3)	<8(-4)	<5(-4)	<3(-3)
^{89}Rb	*	*	<7(-4)	<4(-4)	<4(-4)	<9(-4)
^{134}Cs	4 ± 1 (-6)	<3(-6)	5 ± 1 (-6)	<2(-6)	1.4 ± 0.3 (-6)	<8(-7)
^{136}Cs	<5(-6)	<4(-6)	<4(-6)	<3(-6)	<2(-6)	<2(-6)
^{137}Cs	6 ± 1 (-6)	4 ± 1 (-6)	<4(-6)	<2(-6)	2.3 ± 0.4 (-6)	8 ± 3 (-7)
^{138}Cs	<3(-2)	<5(-3)	<3(-4)	<7(-5)	1.4 ± 0.4 (-4)	1.2 ± 0.4 (-4)
^{139}Cs	*	*	<4(-2)	<3(-2)	<4(-3)	<9(-2)
^{24}Na	1.53 ± 0.02(-2)	1.06 ± 0.02(-2)	8.2 ± 0.1 (-3)	1.37 ± 0.02(-3)	2.28 ± 0.03(-2)	2.39 ± 0.03(-2)
^{51}Cr	3.28 ± 0.03(-3)	2.3 ± 0.1 (-3)	1.01 ± 0.02(-3)	2.49 ± 0.01(-2)	1.28 ± 0.01(-2)	1.26 ± 0.01(-2)
^{54}Mn	2.41 ± 0.03(-3)	3.2 ± 0.1 (-3)	3.79 ± 0.04(-3)	8.8 ± 0.1 (-4)	1.75 ± 0.02(-4)	1.11 ± 0.01(-4)
^{56}Mn	5.8 ± 0.1 (-2)	4.58 ± 0.05(-2)	3.37 ± 0.03(-2)	1.54 ± 0.04(-3)	5.48 ± 0.05(-3)	2.9 ± 0.1 (-3)
^{59}Fe	6.4 ± 0.1 (-4)	6.7 ± 0.4 (-4)	2.36 ± 0.04(-4)	1.84 ± 0.03(-4)	2.4 ± 0.1 (-5)	7.1 ± 0.6 (-6)
^{57}Co	<4(-6)	<4(-6)	2.2 ± 0.4 (-6)	1.8 ± 0.6 (-6)	<2(-6)	<6(-7)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0910	5-13-82 1040
^{58}Co	7.8 ± 0.1 (-4)	9.5 ± 0.1 (-4)	1.19 ± 0.01(-3)	4.50 ± 0.07(-4)	1.65 ± 0.03(-4)	1.07 ± 0.02(-4)
^{60}Co	8.3 ± 0.1 (-4)	9.9 ± 0.5 (-4)	1.03 ± 0.01(-3)	4.67 ± 0.05(-4)	1.47 ± 0.02(-4)	8.4 ± 0.1 (-5)
^{65}Zn	3.1 ± 0.6 (-5)	1.6 ± 0.8 (-5)	9 ± 2 (-6)	2.8 ± 0.2 (-5)	1.0 ± 0.2 (-5)	8.2 ± 0.9 (-6)
^{91}Sr	<2(-4)	<3(-4)	<3(-4)	<6(-5)	<2(-4)	<5(-5)
^{91m}Y	4.3 ± 0.9 (-3)	1.2 ± 0.4 (-3)	<7(-5)	<6(-5)	<3(-5)	5 ± 1 (-5)
^{93}Y	<4(-4)	<5(-4)	<3(-4)	<2(-4)	<5(-4)	<2(-4)
^{95}Zr	4 ± 2 (-6)	6 ± 2 (-6)	<6(-6)	<4(-6)	<2(-6)	<2(-6)
^{95}Nb	<7(-6)	3 ± 1 (-6)	<3(-6)	<3(-6)	<1(-6)	<7(-7)
^{99}Mo	1.7 ± 0.2 (-4)	9 ± 1 (-5)	1.1 ± 0.1 (-4)	2.9 ± 0.2 (-4)	1.1 ± 0.2 (-4)	1.2 ± 0.2 (-4)
^{103}Ru	1.1 ± 0.2 (-5)	1.4 ± 0.2 (-5)	2.1 ± 0.2 (-5)	1.21 ± 0.08(-5)	<9(-7)	<1(-6)
^{106}RuD	<5(-4)	<4(-5)	<4(-5)	<3(-5)	<2(-5)	<2(-5)
^{110m}Ag	<3(-5)	1.4 ± 0.1 (-5)	1.8 ± 0.1 (-5)	3.6 ± 0.1 (-5)	1.43 ± 0.07(-5)	1.74 ± 0.05(-5)
^{124}Sb	4 ± 1 (-6)	5.3 ± 0.9 (-6)	5 ± 1 (-6)	1.2 ± 0.6 (-6)	<6(-7)	<1(-6)
^{125}Sb	<9(-6)	<6(-6)	<8(-6)	<4(-6)	<2(-6)	<2(-6)
^{129m}Te	<3(-5)	<4(-5)	<4(-5)	<3(-5)	<1(-5)	<1(-5)
^{129}Te	<6(-3)	<4(-3)	<1(-3)	<3(-4)	<6(-4)	<3(-4)
^{131m}Te	<6(-5)	<6(-5)	<6(-5)	<5(-5)	<2(-4)	<2(-4)
^{131}Te	*	<8(-2)	<6(-4)	<4(-4)	<4(-4)	<4(-4)
^{132}Te	<4(-6)	<4(-6)	<5(-6)	<2(-6)	<6(-6)	<3(-6)
^{139}Ba	<8(-4)	<3(-4)	<1(-4)	<2(-4)	<2(-4)	1.3 ± 0.3 (-4)
^{140}Ba	4.2 ± 0.5 (-5)	4.0 ± 0.7 (-5)	5 ± 1 (-5)	1.7 ± 0.4 (-5)	<5(-6)	<5(-6)

Table 8.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0910	5-13-82 1040
^{140}La	<2(-5)	<3(-5)	<3(-5)	<2(-5)	2.0 ± 0.5 (-5)	<2(-5)
^{141}Ce	<3(-6)	<3(-6)	<3(-6)	<3(-6)	<3(-6)	2.0 ± 0.7 (-6)
^{143}Ce	<2(-5)	<2(-5)	<2(-5)	<2(-5)	<6(-5)	<2(-5)
^{144}Ce	<2(-5)	<2(-5)	<2(-5)	<1(-5)	<6(-6)	<7(-6)
^{152}Eu	<3(-6)	<4(-6)	<5(-6)	<3(-6)	<2(-6)	<2(-6)
^{154}Eu	<4(-6)	<4(-6)	<4(-6)	<3(-6)	<2(-6)	<2(-6)
^{155}Eu	<4(-6)	<4(-6)	<4(-6)	<5(-6)	<5(-6)	<3(-6)
^{187}W	3.8 ± 0.3 (-4)	1.7 ± 0.3 (-4)	1.7 ± 0.5 (-4)	5 ± 2 (-5)	<2(-4)	7 ± 2 (-5)
^{239}Np	<2(-5)	<2(-5)	1.0 ± 0.5 (-5)	<2(-5)	<3(-5)	<2(-5)

* Radionuclide not measured.

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 5-18-82 1258	5-25-82 1308	6-1-82 0907	6-7-82 1046	6-16-82 1208
^{84}Br	<2(-3)	<8(-4)	<3(-4)	<5(-4)	<3(-4)
^{131}I	8 ± 2 (-6)	6.3 ± 0.6 (-6)	8.9 ± 0.6 (-6)	1.2 ± 0.2 (-5)	6 ± 2 (-6)
^{132}I	2.2 ± 0.1 (-4)	2.67 ± 0.09(-4)	3.0 ± 0.2 (-4)	1.9 ± 0.1 (-4)	2.0 ± 0.1 (-4)
^{133}I	9.9 ± 0.3 (-5)	9.5 ± 0.2 (-5)	9 ± 1 (-5)	1.9 ± 0.1 (-4)	7.6 ± 0.8 (-5)
^{134}I	6.6 ± 0.8 (-4)	6.3 ± 0.5 (-4)	7.8 ± 0.4 (-4)	7.6 ± 0.6 (-4)	5.6 ± 0.4 (-4)
^{135}I	2 ± 1 (-4)	2.4 ± 0.2 (-4)	2.2 ± 0.6 (-4)	<2(-4)	1.9 ± 0.3 (-4)
^{88}Rb	<3(-2)	<9(-3)	<6(-4)	<2(-3)	<2(-3)
^{89}Rb	<3(-2)	<2(-2)	<3(-4)	<6(-4)	<1(-3)
^{134}Cs	<8(-7)	<1(-6)	<2(-6)	<2(-6)	<2(-6)
^{136}Cs	<2(-6)	<2(-6)	<3(-6)	<3(-6)	<4(-6)
^{137}Cs	<2(-6)	<3(-6)	<2(-6)	<4(-6)	<1(-6)
^{138}Cs	<4(-4)	<2(-4)	1.3 ± 0.3 (-4)	<2(-4)	<2(-4)
^{139}Cs	*	*	<5(-3)	<9(-3)	<3(-2)
^{24}Na	2.21 ± 0.02(-2)	2.59 ± 0.02(-2)	4.14 ± 0.06(-2)	7.78 ± 0.09(-2)	3.75 ± 0.05(-2)
^{51}Cr	1.27 ± 0.01(-2)	1.17 ± 0.01(-2)	1.23 ± 0.02(-2)	1.43 ± 0.02(-2)	9.71 ± 0.05(-3)
^{54}Mn	1.03 ± 0.01(-4)	8.5 ± 0.1 (-5)	1.19 ± 0.01(-4)	1.6 ± 0.2 (-4)	1.11 ± 0.02(-4)
^{56}Mn	9.1 ± 0.2 (-4)	1.6 ± 0.2 (-3)	1.9 ± 0.2 (-3)	1.2 ± 0.2 (-3)	2.13 ± 0.02(-3)
^{59}Fe	<2(-6)	3.4 ± 0.9 (-6)	5.1 ± 0.1 (-5)	8.2 ± 0.3 (-5)	1.4 ± 0.1 (-5)
^{57}Co	<9(-7)	7 ± 3 (-7)	<1(-6)	<2(-6)	<2(-6)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 5-18-82 1258	5-25-82 1308	6-1-82 0907	6-7-82 1046	6-16-82 1208
^{58}Co	9.7 ± 0.1 (-5)	1.09 ± 0.02(-4)	9.6 ± 0.1 (-5)	1.1 ± 0.1 (-4)	1.05 ± 0.02(-4)
^{60}Co	7.5 ± 0.1 (-5)	8.1 ± 0.1 (-5)	7.8 ± 0.1 (-5)	1.3 ± 0.1 (-4)	1.02 ± 0.02(-4)
^{65}Zn	8.0 ± 0.9 (-6)	1.0 ± 0.2 (-5)	<5(-6)	<8(-6)	1.0 ± 0.1 (-5)
^{91}Sr	<2(-4)	<8(-5)	<2(-4)	<2(-4)	<8(-5)
^{91m}Y	<4(-4)	1.4 ± 0.2 (-4)	<5(-5)	<2(-4)	<9(-5)
^{93}Y	<2(-4)	<8(-5)	<3(-4)	<3(-4)	<2(-4)
^{95}Zr	<2(-6)	<2(-6)	<3(-6)	<3(-6)	<3(-6)
^{95}Nb	<8(-7)	<1(-6)	<2(-6)	<2(-6)	<8(-7)
^{99}Mo	1.3 ± 0.1 (-4)	1.22 ± 0.07(-4)	1.1 ± 0.3 (-4)	<2(-4)	<2(-4)
^{103}Ru	<2(-6)	<2(-6)	<2(-6)	<3(-6)	<2(-6)
^{106}RuD	<7(-6)	<7(-6)	<2(-5)	<2(-5)	<1(-5)
^{110m}Ag	1.8 ± 0.1 (-5)	1.1 ± 0.1 (-5)	1.59 ± 0.08(-5)	1.60 ± 0.09(-5)	1.7 ± 0.3 (-5)
^{124}Sb	<2(-6)	<2(-6)	<2(-6)	<4(-6)	<3(-6)
^{125}Sb	<2(-6)	<3(-6)	<3(-6)	<4(-6)	<4(-6)
^{129m}Te	<9(-6)	<1(-5)	<2(-5)	<2(-5)	<2(-5)
^{129}Te	<6(-4)	<6(-4)	<4(-4)	<5(-4)	<3(-4)
^{131m}Te	<5(-5)	<3(-5)	<7(-5)	<2(-4)	<6(-5)
^{131}Te	<4(-3)	<2(-3)	<3(-4)	<4(-4)	<5(-4)
^{132}Te	<3(-6)	<2(-6)	<2(-6)	<7(-6)	<8(-6)
^{139}Ba	9 ± 3 (-5)	7 ± 3 (-5)	1.2 ± 0.4 (-4)	1.2 ± 0.3 (-4)	1.1 ± 0.2 (-4)
^{140}Ba	<6(-6)	<7(-6)	<6(-6)	<2(-5)	<7(-6)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 5-18-82 1258	5-25-82 1308	6-1-82 0907	6-7-82 1046	6-16-82 1208
^{140}La	<9(-6)	<6(-6)	<9(-6)	<4(-5)	<3(-5)
^{141}Ce	<3(-6)	<2(-6)	<3(-6)	<4(-6)	<3(-6)
^{143}Ce	<2(-5)	<5(-6)	<2(-5)	<4(-5)	<2(-5)
^{144}Ce	<5(-6)	<9(-6)	<8(-6)	<8(-6)	<6(-6)
^{152}Eu	<2(-6)	<2(-6)	<2(-6)	<3(-6)	<2(-6)
^{154}Eu	<2(-6)	<3(-6)	<2(-6)	<3(-6)	<4(-6)
^{155}Eu	<3(-6)	<2(-6)	<3(-6)	<5(-6)	<3(-6)
^{187}W	<5(-5)	8 ± 1 (-5)	8 ± 2 (-5)	<2(-4)	7 ± 2 (-5)
^{239}Np	<2(-5)	<7(-6)	<8(-6)	<5(-5)	<2(-5)

* Radionuclide not measured.

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 9-26-82 1300	9-28-82 0950	10-8-82 1554	10-10-82 0115	10-13-82 1206	10-13-82 1553
^{84}Br	*	*	<3(-5)	<2(-5)	3 ± 1 (-5)	<2(-5)
^{131}I	<3(-7)	<3(-6)	<1(-6)	<2(-6)	<2(-5)	<2(-6)
^{132}I	<2(-4)	*	<2(-6)	<4(-6)	<2(-5)	<4(-6)
^{133}I	<8(-7)	<7(-6)	<8(-7)	<3(-6)	<2(-5)	<2(-6)
^{134}I	*	*	9.4 ± 0.3 (-5)	1.60 ± 0.04(-4)	3 ± 1 (-5)	1.21 ± 0.05(-4)
^{135}I	<7(-6)	<6(-5)	<3(-6)	<5(-6)	<2(-5)	<6(-6)
^{88}Rb	*	*	<9(-5)	<4(-5)	<4(-5)	<4(-5)
^{89}Rb	*	*	<3(-4)	<9(-5)	<9(-5)	<2(-4)
^{134}Cs	<3(-7)	<4(-6)	<9(-7)	<3(-6)	<2(-5)	<3(-6)
^{136}Cs	<7(-7)	<6(-6)	<2(-6)	<4(-6)	<2(-5)	<3(-6)
^{137}Cs	<7(-7)	<6(-6)	<3(-6)	<3(-6)	<2(-5)	<2(-6)
^{138}Cs	*	*	<7(-6)	<6(-6)	<9(-6)	<8(-6)
^{139}Cs	*	*	*	<3(-3)	<7(-4)	<3(-3)
^{24}Na	<3(-7)	<5(-6)	<2(-7)	2.6 ± 0.3 (-6)	<7(-7)	3.3 ± 0.2 (-6)
^{51}Cr	<3(-6)	8 ± 1 (-5)	<8(-6)	4.09 ±0.07 (-4)	1.28 ± 0.04(-3)	6.84 ± 0.07(-4)
^{54}Mn	7.0 ± 0.2 (-5)	1.38 ± 0.04(-3)	5.07 ± 0.07(-4)	1.80 ± 0.03(-3)	1.46 ± 0.03(-2)	3.43 ± 0.03(-3)
^{56}Mn	<2(-4)	<5(-3)	<2(-6)	5.45 ± 0.07(-4)	<2(-5)	8.36 ± 0.09(-4)
^{59}Fe	<9(-7)	8.8 ± 0.3 (-5)	7.8 ± 0.7 (-6)	3.25 ± 0.05(-4)	3.13 ± 0.05(-3)	6.31 ± 0.04(-4)
^{57}Co	<3(-7)	<2(-6)	<8(-7)	<9(-7)	7 ± 3 (-6)	1.6 ± 0.5 (-6)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	9-26-82 1300	9-28-82 0950	10-8-82 1554	10-10-82 0115	10-13-82 1206	10-13-82 1553
^{58}Co	1.41 ± 0.03(-5)	3.81 ± 0.04(-4)	1.45 ± 0.02(-4)	1.76 ± 0.03(-4)	1.54 ± 0.03(-3)	4.30 ± 0.05(-4)
^{60}Co	9.2 ± 0.1 (-5)	1.25 ± 0.01(-3)	6.9 ± 0.1 (-4)	1.31 ± 0.02(-3)	1.06 ± 0.01(-2)	2.81 ± 0.02(-3)
^{65}Zn	1.6 ± 0.4 (-6)	<1(-5)	1.4 ± 0.1 (-5)	3.5 ± 0.3 (-5)	2.1 ± 0.2 (-4)	6.0 ± 0.2 (-5)
^{91}Sr	<7(-6)	<7(-5)	<4(-6)	<1(-5)	<5(-5)	<7(-6)
^{91m}Y	*	*	<4(-6)	<5(-6)	<3(-5)	<9(-6)
^{93}Y	<9(-6)	<2(-4)	<2(-5)	<3(-5)	<2(-4)	<2(-5)
^{95}Zr	<8(-7)	<6(-6)	<2(-6)	<6(-6)	3.1 ± 0.8 (-5)	<5(-6)
^{95}Nb	<3(-7)	<4(-6)	<7(-7)	<4(-6)	3.8 ± 0.7 (-5)	3.9 ± 0.7 (-6)
^{99}Mo	<3(-6)	<3(-5)	<9(-6)	<2(-5)	<1(-4)	<2(-5)
^{103}Ru	<6(-7)	<5(-6)	<2(-6)	<3(-6)	<2(-5)	<3(-6)
^{106}RuD	<3(-6)	<4(-5)	<9(-6)	<5(-5)	<2(-4)	<2(-5)
^{110m}Ag	2.4 ± 0.1 (-6)	<4(-5)	<3(-5)	<7(-5)	<3(-5)	<4(-5)
^{124}Sb	<3(-7)	<3(-6)	<9(-7)	4.3 ± 0.6 (-6)	3.1 ± 0.3 (-5)	7.4 ± 0.6 (-6)
^{125}Sb	<2(-6)	<2(-5)	<3(-6)	<6(-6)	<5(-5)	<4(-6)
^{129m}Te	<4(-6)	<3(-5)	<2(-5)	<4(-5)	1.4 ± 0.6 (-4)	<4(-5)
^{129}Te	*	*	<5(-5)	<4(-5)	<3(-4)	<8(-5)
^{131m}Te	<3(-6)	<3(-5)	<4(-6)	<1(-5)	<8(-5)	<1(-5)
^{131}Te	*	*	<7(-5)	<5(-5)	<2(-4)	<8(-5)
^{132}Te	<3(-7)	<3(-6)	<5(-7)	<2(-6)	<2(-5)	<2(-6)
^{139}Ba	*	*	<5(-6)	<1(-5)	<4(-5)	<2(-5)
^{140}Ba	<1(-6)	<2(-5)	<4(-6)	<7(-6)	<6(-5)	<2(-5)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	9-26-82 1300	9-28-82 0950	10-8-82 1554	10-10-82 0115	10-13-82 1206	10-13-82 1553
^{140}La	<2(-7)	<2(-6)	<3(-7)	<2(-6)	<4(-6)	<5(-7)
^{141}Ce	<3(-7)	<3(-6)	<8(-7)	<2(-6)	<3(-5)	<2(-6)
^{143}Ce	<5(-7)	<9(-6)	<2(-6)	<3(-6)	<2(-5)	<4(-6)
^{144}Ce	<1(-6)	<2(-5)	<3(-6)	<2(-5)	4 ± 2 (-5)	<8(-6)
^{152}Eu	<5(-7)	<5(-6)	<2(-6)	<6(-6)	<2(-5)	<3(-6)
^{154}Eu	<7(-7)	<6(-6)	<3(-6)	<5(-6)	<4(-5)	<3(-6)
^{155}Eu	<5(-7)	<4(-6)	<3(-6)	<4(-6)	<3(-5)	<4(-6)
^{187}W	<2(-6)	<3(-5)	<3(-6)	<8(-6)	<5(-5)	<7(-6)
^{239}Np	<6(-7)	<7(-6)	<3(-6)	<4(-6)	<2(-5)	<5(-6)

* Radionuclide not measured.

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-19-82 1128	11-3-82 1330
^{84}Br	<4(-4)	<6(-4)
^{131}I	6.2 ± 0.9 (-6)	1.4 ± 0.1 (-5)
^{132}I	8 ± 1 (-5)	4.5 ± 0.2 (-4)
^{133}I	1.26 ± 0.09(-4)	1.65 ± 0.09(-4)
^{134}I	8.1 ± 0.4 (-4)	9.2 ± 0.6 (-4)
^{135}I	2.3 ± 0.5 (-4)	3.3 ± 0.9 (-4)
^{88}Rb	<3(-3)	<2(-3)
^{89}Rb	<2(-3)	<5(-4)
^{134}Cs	<2(-6)	<2(-6)
^{136}Cs	<3(-6)	<4(-6)
^{137}Cs	<4(-6)	<2(-6)
^{138}Cs	<3(-4)	2.2 ± 0.5 (-4)
^{139}Cs	<2(-1)	<6(-3)
^{24}Na	3.16 ± 0.02(-2)	3.28 ± 0.04(-2)
^{51}Cr	3.42 ± 0.02(-3)	5.67 ± 0.03(-3)
^{54}Mn	1.35 ± 0.02(-4)	1.02 ± 0.02(-4)
^{56}Mn	3.37 ± 0.03(-3)	4.94 ± 0.06(-3)
^{59}Fe	7 ± 1 (-6)	1.1 ± 0.2 (-5)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-19-82 1128	11-3-82 1330
^{57}Co	<6(-7)	<2(-6)
^{58}Co	3.8 ± 0.1 (-5)	7.9 ± 0.2 (-5)
^{60}Co	1.19 ± 0.01(-4)	9.7 ± 0.2 (-5)
^{65}Zn	1.4 ± 0.2 (-5)	7 ± 3 (-6)
^{91}Sr	<2(-4)	<2(-4)
^{91m}Y	7 ± 2 (-5)	<7(-5)
^{93}Y	<2(-4)	<4(-4)
^{95}Zr	<3(-6)	<4(-6)
^{95}Nb	<2(-6)	<2(-6)
^{99}Mo	7 ± 2 (-5)	1.4 ± 0.1 (-4)
^{103}Ru	<2(-6)	<3(-6)
^{106}RuD	<2(-5)	<2(-5)
^{110m}Ag	4.7 ± 0.1 (-5)	1.09 ± 0.09(-5)
^{124}Sb	<3(-6)	<4(-6)
^{125}Sb	<4(-6)	<5(-6)
^{129m}Te	<2(-5)	<3(-5)
^{129}Te	<4(-4)	<6(-4)
^{131m}Te	<7(-5)	<8(-5)
^{131}Te	<6(-4)	<5(-4)
^{132}Te	<3(-6)	<4(-6)

Table B.3-3 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-19-82 1128	11-3-82 1330
^{139}Ba	1.8 ± 0.3 (-4)	<2(-4)
^{140}Ba	<6(-6)	<9(-6)
^{140}La	<2(-5)	<2(-5)
^{141}Ce	<2(-6)	<3(-6)
^{143}Ce	<2(-5)	<2(-5)
^{144}Ce	<7(-6)	<1(-5)
^{152}Eu	<3(-6)	<4(-6)
^{154}Eu	<3(-6)	<6(-6)
^{155}Eu	<3(-6)	<6(-6)
^{187}W	<7(-5)	*
^{239}Np	<2(-5)	<2(-5)

* Radionuclide not measured.

Table B.3-4
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1047

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<2(-3)	a, *	<5(-4)
^{131}I	1.9 ± 0.7 (-7)	1.0 ± 0.1 (-5)	1.0 ± 0.1 (-5)	1.2 ± 0.2 (-5)
^{132}I	*	2.0 ± 0.2 (-4)	a, *	1.9 ± 0.1 (-4)
^{133}I	<9(-7)	1.61 ± 0.06(-4)	1.61 ± 0.06(-4)	1.9 ± 0.1 (-4)
^{134}I	*	8 ± 1 (-4)	a, *	7.6 ± 0.6 (-4)
^{135}I	<2(-5)	3.8 ± 0.5 (-4)	3.9 ± 0.5 (-4)	1.8 ± 0.6 (-4)
^{88}Rb	*	<6(-2)	a, *	<2(-3)
^{89}Rb	*	*	*	<6(-4)
^{134}Cs	<3(-7)	<9(-7)	a	<2(-6)
^{136}Cs	<2(-7)	<2(-6)	a	<3(-6)
^{137}Cs	3 ± 1 (-7)	1.2 ± 0.3 (-6)	a	<4(-6)
^{138}Cs	*	<7(-4)	a, *	<2(-4)
^{139}Cs	*	*	*	<9(-3)
^{24}Na	4.51 ± 0.07(-4)	7.21 ± 0.09(-2)	7.26 ± 0.09(-2)[b]	7.78 ± 0.09(-2)
^{51}Cr	4.42 ± 0.02(-4)	1.38 ± 0.02(-2)	1.42 ± 0.02(-2)	1.43 ± 0.02(-2)
^{54}Mn	6.6 ± 0.1 (-5)	7.6 ± 0.3 (-5)	1.42 ± 0.03(-4)	1.6 ± 0.2 (-4)
^{56}Mn	<2(-3)	7.1 ± 0.9 (-4)	a	1.2 ± 0.2 (-3)
^{59}Fe	6.00 ± 0.07(-5)	2.2 ± 0.1 (-5)	8.2 ± 0.1 (-5)	8.2 ± 0.3 (-5)
^{57}Co	<8(-8)	<9(-7)	a	<2(-6)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1047

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{58}Co	1.31 ± 0.03(-5)	6.6 ± 0.5 (-5)	7.9 ± 0.5 (-5)	1.1 ± 0.1 (-4)
^{60}Co	2.99 ± 0.03(-5)	7.3 ± 0.1 (-5)	1.03 ± 0.01(-4)	1.3 ± 0.1 (-4)
^{65}Zn	<2(-6)	2.7 ± 0.9 (-6)	a	<8(-6)
^{91}Sr	<7(-6)	<8(-5)	a	<2(-4)
^{91m}Y	*	<9(-4)	a, *	<2(-4)
^{93}Y	<8(-6)	<2(-4)	a	<3(-4)
^{95}Zr	2.9 ± 0.2 (-6)	<2(-6)	a	<3(-6)
^{95}Nb	4.2 ± 0.6 (-6)	<7(-7)	a	<2(-6)
^{99}Mo	<3(-6)	<1(-4)	a	<2(-4)
^{103}Ru	<5(-7)	<2(-6)	a	<3(-6)
^{106}RuD	<2(-6)	<8(-6)	a	<2(-5)
^{110m}Ag	3.4 ± 0.1 (-6)	1.16 ± 0.05(-5)	1.50 ± 0.05(-5)	1.60 ± 0.09(-5)
^{124}Sb	6 ± 3 (-7)	<3(-6)	a	<4(-6)
^{125}Sb	<6(-7)	<3(-6)	a	<4(-6)
^{129m}Te	<4(-6)	<2(-5)	a	<2(-5)
^{129}Te	*	<6(-4)	a, *	<5(-4)
^{131m}Te	<3(-6)	<9(-5)	a	<2(-4)
^{131}Te	*	<4(-3)	a, *	<4(-4)
^{132}Te	<2(-7)	<6(-6)	a	<7(-6)
^{139}Ba	*	<2(-4)	a, *	1.2 ± 0.3 (-4)
^{140}Ba	<2(-6)	<6(-6)	a	<2(-5)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1047

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}La	<7(-7)	<2(-5)	a	<4(-5)
^{141}Ce	<2(-7)	<3(-6)	a	<4(-6)
^{143}Ce	<8(-7)	<3(-5)	a	<4(-5)
^{144}Ce	4.0 ± 0.4 (-6)	<9(-6)	a	<8(-6)
^{152}Eu	<4(-7)	<2(-6)	a	<3(-6)
^{154}Eu	<7(-7)	<3(-6)	a	<3(-6)
^{155}Eu	<4(-7)	<3(-6)	a	<5(-6)
^{187}W	9.6 ± 0.7 (-6)	<7(-5)	a	<2(-4)
^{239}Np	<4(-7)	<4(-5)	a	<5(-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 9-26-82
Time: 1300

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<2(-8)	<9(-8)	a	<3(-7)
^{132}I	*	*	*	<2(-4)
^{133}I	<7(-8)	<2(-7)	a	<8(-7)
^{134}I	*	*	*	*
^{135}I	<3(-6)	<3(-6)	a	<7(-6)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<4(-8)	<8(-8)	a	<3(-7)
^{136}Cs	<3(-8)	<7(-8)	a	<7(-7)
^{137}Cs	<3(-8)	<2(-7)	a	<7(-7)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<4(-8)	1.5 ± 0.3 (-7)	a	<3(-7)
^{51}Cr	4 ± 1 (-7)	2.6 ± 0.4 (-6)	3.0 ± 0.4 (-6)	<3(-6)
^{54}Mn	7.7 ± 0.2 (-6)	5.37 ± 0.05(-5)	6.1 ± 0.5 (-5)	7.0 ± 0.2 (-5)
^{56}Mn	*	*	*	<2(-4)
^{59}Fe	6.3 ± 0.2 (-7)	<8(-8)	a	<9(-7)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 9-26-82
Time: 1300

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<1(-8)	<7(-8)	a	<3(-7)
^{58}Co	8.9 ± 0.4 (-7)	1.20 ± 0.02(-5)	1.29 ± 0.02(-5)	1.41 ± 0.03(-5)
^{60}Co	6.69 ± 0.09(-6)	7.8 ± 0.2 (-5)	8.5 ± 0.2 (-5)	9.2 ± 0.1 (-5)
^{65}Zn	2.8 ± 0.5 (-7)	1.6 ± 0.1 (-6)	1.9 ± 0.1 (-6)	1.6 ± 0.4 (-6)
^{91}Sr	<2(-6)	<3(-6)	a	<7(-6)
^{91m}Y	*	*	*	*
^{93}Y	<2(-6)	<8(-6)	a	<9(-6)
^{95}Zr	<7(-8)	<2(-7)	a	<8(-7)
^{95}Nb	<3(-8)	*	a, *	<3(-7)
^{99}Mo	<2(-7)	<8(-7)	a	<3(-6)
^{103}Ru	<5(-8)	<5(-8)	a	<6(-7)
^{106}RuD	<3(-7)	*	a, *	<3(-6)
^{110m}Ag	7.5 ± 0.2 (-7)	1.12 ± 0.04(-6)	1.87 ± 0.04(-6)[b]	2.4 ± 0.1 (-6)
^{124}Sb	<6(-8)	<2(-8)	a	<3(-7)
^{125}Sb	<5(-8)	<2(-7)	a	<2(-6)
^{129m}Te	<4(-7)	<5(-7)	a	<4(-6)
^{129}Te	*	*	*	*
^{131m}Te	<3(-7)	<8(-7)	a	<3(-6)
^{131}Te	*	*	*	*
^{132}Te	<2(-8)	<5(-8)	a	<3(-7)

Table 8.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 9-26-82
Time: 1300

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	<2(-7)	<2(-7)	a	<1(-6)
^{140}La	<8(-8)	7 ± 1 (-8)	a	<2(-7)
^{141}Ce	<2(-8)	<2(-7)	a	<3(-7)
^{143}Ce	<8(-8)	<2(-7)	a	<5(-7)
^{144}Ce	<7(-8)	<5(-7)	a	<1(-6)
^{152}Eu	<4(-8)	<1(-7)	a	<5(-7)
^{154}Eu	<5(-8)	<5(-8)	a	<7(-7)
^{155}Eu	<4(-8)	<2(-7)	a	<5(-7)
^{187}W	<2(-7)	<8(-7)	a	<2(-6)
^{239}Np	<6(-8)	<3(-7)	a	<6(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table 8.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0950

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<2(-6)	<2(-6)	a	<3(-6)
^{132}I	*	*	*	*
^{133}I	<2(-4)	<2(-5)	a	<7(-6)
^{134}I	*	*	*	*
^{135}I	*	*	*	<6(-5)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<8(-7)	<3(-6)	a	<4(-6)
^{136}Cs	<2(-6)	<2(-6)	a	<6(-6)
^{137}Cs	<3(-6)	<3(-6)	a	<6(-6)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<3(-4)	<6(-6)	a	<5(-6)
^{51}Cr	1.9 ± 0.3 (-5)	4.0 ± 0.6 (-5)	5.9 ± 0.7 (-5)	8 ± 1 (-5)
^{54}Mn	2.53 ± 0.04(-4)	6.0 ± 0.1 (-4)	8.5 ± 0.1 (-4)[b]	1.38 ± 0.04(-3)
^{56}Mn	*	*	*	<5(-3)
^{59}Fe	4.2 ± 0.1 (-5)	3.9 ± 0.1 (-5)	8.1 ± 0.1 (-5)	8.8 ± 0.3 (-5)

Table 8.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0950

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<3(-7)	<1(-6)	a	<2(-6)
^{58}Co	3.5 ± 0.1 (-5)	1.97 ± 0.04(-4)	2.32 ± 0.04(-4)[b]	3.81 ± 0.04(-4)
^{60}Co	1.63 ± 0.02(-4)	6.25 ± 0.09(-4)	7.88 ± 0.09(-4)[b]	1.25 ± 0.01(-3)
^{65}Zn	6 ± 1 (-6)	4 ± 1 (-6)	1.0 ± 0.1 (-5)	<1(-5)
^{91}Sr	*	<2(-3)	a, *	<7(-5)
^{91m}Y	*	*	*	*
^{93}Y	*	<2(-3)	a	<2(-4)
^{95}Zr	<2(-6)	<2(-6)	a	<6(-6)
^{95}Nb	<9(-7)	<4(-6)	a	<4(-6)
^{99}Mo	<2(-5)	<3(-5)	a	<3(-5)
^{103}Ru	<9(-7)	<4(-6)	a	<5(-6)
^{106}RuD	<2(-5)	<2(-5)	a	<4(-5)
^{110m}Ag	<8(-6)	<3(-5)	a	<4(-5)
^{124}Sb	<2(-6)	<2(-6)	a	<3(-6)
^{125}Sb	<3(-6)	<3(-6)	a	<2(-5)
^{129m}Te	<2(-5)	<2(-5)	a	<3(-5)
^{129}Te	*	*	*	*
^{131m}Te	<2(-4)	<4(-5)	a	<3(-5)
^{131}Te	*	*	*	*
^{132}Te	<2(-6)	<2(-6)	a	<3(-6)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0950

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	<4(-6)	<5(-6)	a	<2(-5)
^{140}La	<1(-5)	<3(-6)	a	<2(-6)
^{141}Ce	<4(-7)	<2(-6)	a	<3(-6)
^{143}Ce	<2(-5)	<7(-6)	a	<9(-6)
^{144}Ce	<2(-6)	<5(-6)	a	<2(-5)
^{152}Eu	<2(-6)	<4(-6)	a	<5(-6)
^{154}Eu	<2(-6)	<2(-6)	a	<6(-6)
^{155}Eu	<8(-7)	<3(-6)	a	<4(-6)
^{187}W	<2(-4)	<5(-5)	a	<3(-5)
^{239}Np	<7(-6)	<8(-6)	a	<7(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-8-82
Time: 1554

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<3(-5)
^{131}I	<3(-8)	<6(-7)	a	<1(-6)
^{132}I	*	*	*	<2(-6)
^{133}I	<9(-8)	<3(-6)	a	<8(-7)
^{134}I	*	*	*	9.4 ± 0.3 (-5)
^{135}I	<5(-6)	<9(-5)	a	<3(-6)
^{88}Rb	*	*	*	<9(-5)
^{89}Rb	*	*	*	<3(-4)
^{134}Cs	<6(-8)	<8(-7)	a	<9(-7)
^{136}Cs	<3(-8)	<1(-6)	a	<2(-6)
^{137}Cs	<3(-8)	<8(-7)	a	<3(-6)
^{138}Cs	*	*	*	<7(-6)
^{139}Cs	*	*	*	*
^{24}Na	<8(-8)	<4(-7)	a	<2(-7)
^{51}Cr	3.0 ± 0.1 (-6)	8 ± 2 (-6)	1.1 ± 0.2 (-5)[b]	<8(-6)
^{54}Mn	2.86 ± 0.06(-5)	5.73 ± 0.09(-4)	6.02 ± 0.09(-4)[b]	5.07 ± 0.07(-4)
^{56}Mn	*	*	*	<2(-6)
^{59}Fe	3.86 ± 0.07(-6)	3.4 ± 0.5 (-6)	7.3 ± 0.5 (-6)	7.8 ± 0.7 (-6)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-8-82
Time: 1554

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<8(-9)	<6(-7)	a	<8(-7)
^{58}Co	2.47 ± 0.06(-6)	1.68 ± 0.03(-4)	1.70 ± 0.03(-4)[b]	1.45 ± 0.02(-4)
^{60}Co	3.36 ± 0.05(-5)	7.6 ± 0.1 (-4)	7.9 ± 0.1 (-4)[b]	6.9 ± 0.1 (-4)
^{65}Zn	1.0 ± 0.1 (-6)	1.9 ± 0.2 (-5)	2.0 ± 0.2 (-5)	1.4 ± 0.1 (-5)
^{91}Sr	<2(-6)	<5(-5)	a	<4(-6)
^{91m}Y	*	*	*	<4(-6)
^{93}Y	<5(-6)	<2(-4)	a	<2(-5)
^{95}Zr	<5(-8)	<2(-6)	a	<2(-6)
^{95}Nb	*	<2(-6)	a	<7(-7)
^{99}Mo	<4(-7)	<8(-6)	a	<9(-6)
^{103}Ru	<2(-6)	<1(-6)	a	<2(-6)
^{106}RuD	*	<2(-5)	a	<9(-6)
^{110m}Ag	<3(-8)	8.4 ± 0.5 (-6)	8.4 ± 0.5 (-6)	<3(-5)
^{124}Sb	<3(-8)	<6(-7)	a	<9(-7)
^{125}Sb	6 ± 2 (-8)	<2(-6)	a	<3(-6)
^{129m}Te	<3(-7)	<9(-6)	a	<2(-5)
^{129}Te	*	*	*	<5(-5)
^{131m}Te	<3(-7)	<8(-6)	a	<4(-6)
^{131}Te	*	*	*	<7(-5)
^{132}Te	<2(-8)	<1(-6)	a	<5(-7)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-8-82
Time: 1554

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	<5(-6)
^{140}Ba	<8(-8)	<3(-6)	a	<4(-6)
^{140}La	6.6 ± 0.8 (-8)	<4(-7)	a	<3(-7)
^{141}Ce	<2(-8)	<6(-7)	a	<8(-7)
^{143}Ce	<6(-8)	<3(-6)	a	<2(-6)
^{144}Ce	2.4 ± 0.3 (-7)	<3(-6)	a	<3(-6)
^{152}Eu	<5(-8)	<9(-7)	a	<2(-6)
^{154}Eu	<8(-8)	<2(-6)	a	<3(-6)
^{155}Eu	<2(-7)	<2(-6)	a	<3(-6)
^{187}W	<3(-7)	<9(-6)	a	<3(-6)
^{239}Np	<5(-8)	<2(-6)	a	<3(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0115

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-5)
^{131}I	<4(-7)	<2(-6)	a	<2(-6)
^{132}I	<2(-4)	*	a, *	<4(-6)
^{133}I	<2(-6)	<5(-6)	a	<3(-6)
^{134}I	*	*	*	1.60 ± 0.04(-4)
^{135}I	<6(-6)	<2(-4)	a	<5(-6)
^{88}Rb	*	*	*	<4(-5)
^{89}Rb	*	*	*	<9(-5)
^{134}Cs	<4(-7)	<2(-6)	a	<3(-6)
^{136}Cs	<6(-7)	<2(-6)	a	<4(-6)
^{137}Cs	<5(-7)	<2(-6)	a	<3(-6)
^{138}Cs	*	*	*	<6(-6)
^{139}Cs	*	*	*	<3(-3)
^{24}Na	<3(-7)	<4(-6)	a	2.6 ± 0.3 (-6)
^{51}Cr	1.02 ± 0.01(-4)	3.16 ± 0.05(-4)	4.18 ± 0.05(-4)	4.09 ± 0.07(-4)
^{54}Mn	1.03 ± 0.01(-3)	1.05 ± 0.02(-3)	2.08 ± 0.02(-3)[b]	1.80 ± 0.03(-3)
^{56}Mn	<2(-4)	*	a, *	5.45 ± 0.07(-4)
^{59}Fe	2.20 ± 0.02(-4)	1.56 ± 0.02(-4)	3.76 ± 0.03(-4)[b]	3.25 ± 0.05(-4)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0115

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	4.5 ± 0.4 (-7)	<7(-7)	a	<9(-7)
^{58}Co	6.47 ± 0.09(-5)	1.16 ± 0.03(-4)	1.81 ± 0.03(-4)	1.76 ± 0.03(-4)
^{60}Co	6.32 ± 0.07(-4)	7.11 ± 0.07(-4)	1.3 ± 0.1 (-3)	1.31 ± 0.02(-3)
^{65}Zn	1.89 ± 0.09(-5)	1.2 ± 0.1 (-5)	3.1 ± 0.1 (-5)	3.5 ± 0.3 (-5)
^{91}Sr	<6(-6)	<8(-5)	a	<1(-5)
^{91m}Y	*	*	*	<5(-6)
^{93}Y	<8(-6)	<2(-4)	a	<3(-5)
^{95}Zr	<2(-6)	<3(-6)	a	<6(-6)
^{95}Nb	2.4 ± 0.2 (-6)	<2(-6)	a	<4(-6)
^{99}Mo	<2(-6)	<2(-5)	a	<2(-5)
^{103}Ru	<5(-7)	<2(-6)	a	<3(-6)
^{106}RuD	<5(-6)	<2(-5)	a	<5(-5)
^{110m}Ag	2.3 ± 0.3 (-6)	2.79 ± 0.08(-5)	3.02 ± 0.09(-5)	<7(-5)
^{124}Sb	2.5 ± 0.2 (-6)	2.0 ± 0.3 (-6)	4.5 ± 0.4 (-6)	4.3 ± 0.6 (-6)
^{125}Sb	<7(-7)	<3(-6)	a	<6(-6)
^{129m}Te	<9(-6)	<2(-5)	a	<4(-5)
^{129}Te	*	*	*	<4(-5)
^{131m}Te	<2(-6)	<2(-5)	a	<1(-5)
^{131}Te	*	*	*	<5(-5)
^{132}Te	<3(-7)	<2(-6)	a	<2(-6)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0115

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	<1(-5)
^{140}Ba	<3(-6)	<7(-6)	a	<7(-6)
^{140}La	<3(-7)	<4(-7)	a	<2(-6)
^{141}Ce	<3(-7)	<2(-6)	a	<2(-6)
^{143}Ce	<6(-7)	<5(-6)	a	<3(-6)
^{144}Ce	<9(-7)	<7(-6)	a	<2(-5)
^{152}Eu	<9(-7)	<2(-6)	a	<6(-6)
^{154}Eu	<9(-7)	<2(-6)	a	<5(-6)
^{155}Eu	<6(-7)	<4(-6)	a	<4(-6)
^{187}W	<2(-6)	<2(-5)	a	<8(-6)
^{239}Np	<7(-7)	<4(-6)	a	<4(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-13-82
Time: 1206

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	3 ± 1 (-5)
^{131}I	<7(-7)	<3(-6)	a	<2(-5)
^{132}I	<4(-5)	<7(-5)	a	<2(-5)
^{133}I	<2(-6)	<5(-6)	a	<2(-5)
^{134}I	*	*	*	3 ± 1 (-5)
^{135}I	<8(-6)	<2(-5)	a	<2(-5)
^{88}Rb	*	*	*	<4(-5)
^{89}Rb	*	*	*	<9(-5)
^{134}Cs	<2(-6)	<4(-6)	a	<2(-5)
^{136}Cs	<2(-6)	<5(-6)	a	<2(-5)
^{137}Cs	<2(-6)	<2(-5)	a	<2(-5)
^{138}Cs	*	*	*	<9(-6)
^{139}Cs	*	*	*	<7(-4)
^{24}Na	<4(-7)	<3(-7)	a	<7(-7)
^{51}Cr	9.18 ± 0.08(-4)	2.7 ± 0.2 (-4)	1.19 ± 0.02(-3)	1.28 ± 0.04(-3)
^{54}Mn	8.97 ± 0.06(-3)	4.72 ± 0.07(-3)	1.37 ± 0.01(-2)	1.46 ± 0.03(-2)
^{56}Mn	<5(-5)	<3(-5)	a	<2(-5)
^{59}Fe	2.16 ± 0.01(-3)	6.40 ± 0.07(-4)	2.80 ± 0.01(-3)b	3.13 ± 0.05(-3)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-13-82
Time: 1206

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	3.2 ± 0.1 (-6)	5 ± 1 (-6)	8 ± 1 (-6)	7 ± 3 (-6)
^{58}Co	5.33 ± 0.05(-4)	1.00 ± 0.02(-3)	1.53 ± 0.02(-3)	1.54 ± 0.03(-3)
^{60}Co	4.90 ± 0.02(-3)	4.40 ± 0.04(-3)	9.30 ± 0.04(-3)[b]	1.06 ± 0.01(-3)
^{65}Zn	1.39 ± 0.03(-4)	5.3 ± 0.8 (-5)	1.92 ± 0.09(-4)	2.1 ± 0.2 (-4)
^{91}Sr	<2(-5)	<3(-5)	a	<5(-5)
^{91m}Y	*	*	*	<3(-5)
^{93}Y	<2(-5)	<6(-5)	a	<2(-4)
^{95}Zr	1.98 ± 0.09(-5)	<9(-6)	a	3.1 ± 0.8 (-5)
^{95}Nb	3.72 ± 0.06(-5)	7 ± 2 (-6)	4.4 ± 0.2 (-5)	3.8 ± 0.7 (-5)
^{99}Mo	<6(-6)	<5(-5)	a	<1(-4)
^{103}Ru	<2(-6)	<6(-6)	a	<2(-5)
^{106}RuD	<2(-5)	<4(-5)	a	<2(-4)
^{110m}Ag	5 ± 1 (-6)	<2(-5)	a	<3(-5)
^{124}Sb	1.86 ± 0.05(-5)	5 ± 1 (-6)	2.4 ± 0.1 (-5)[b]	3.1 ± 0.3 (-5)
^{125}Sb	9 ± 1 (-6)	<9(-6)	a	<5(-5)
^{129m}Te	<2(-5)	<5(-5)	a	1.4 ± 0.6 (-4)
^{129}Te	<5(-3)	<1(-2)	a	<3(-4)
^{131m}Te	<4(-6)	3 ± 1 (-5)	3 ± 1 (-5)	<8(-5)
^{131}Te	*	*	*	<2(-4)
^{132}Te	<6(-7)	3 ± 1 (-6)	3 ± 1 (-6)	<2(-5)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-13-82
Time: 1206

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	<3(-4)	<1(-3)	a	<4(-5)
^{140}Ba	<5(-6)	<2(-5)	a	<6(-5)
^{140}La	<9(-7)	<1(-6)	a	<4(-6)
^{141}Ce	<2(-6)	<7(-6)	a	<3(-5)
^{143}Ce	<2(-6)	<6(-6)	a	<2(-5)
^{144}Ce	<5(-6)	<2(-5)	a	4 ± 2 (-5)
^{152}Eu	<2(-6)	<4(-6)	a	<2(-5)
^{154}Eu	<3(-6)	<5(-6)	a	<4(-5)
^{155}Eu	<2(-6)	<2(-5)	a	<3(-5)
^{187}W	<8(-6)	<2(-5)	a	<5(-5)
^{239}Np	<2(-6)	<2(-5)	a	<2(-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-13-82
Time: 1553

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-5)
^{131}I	<4(-7)	<7(-7)	a	<2(-6)
^{132}I	<2(-5)	<3(-4)	a	<4(-6)
^{133}I	<9(-7)	<3(-6)	a	<2(-6)
^{134}I	*	*	*	1.21 ± 0.05(-4)
^{135}I	<6(-6)	<2(-5)	a	<6(-6)
^{88}Rb	*	*	*	<4(-5)
^{89}Rb	*	*	*	<2(-4)
^{134}Cs	<7(-7)	<2(-6)	a	<3(-6)
^{136}Cs	<7(-7)	<2(-6)	a	<3(-6)
^{137}Cs	<1(-6)	<8(-7)	a	<2(-6)
^{138}Cs	*	*	*	<8(-6)
^{139}Cs	*	*	*	<3(-3)
^{24}Na	<3(-7)	3.4 ± 0.3 (-6)	3.5 ± 0.3 (-6)	3.3 ± 0.2 (-6)
^{51}Cr	2.94 ± 0.03(-4)	4.37 ± 0.04(-4)	7.31 ± 0.05(-4)	6.84 ± 0.07(-4)
^{54}Mn	2.91 ± 0.03(-3)	1.39 ± 0.02(-3)	4.30 ± 0.04(-3)[b]	3.43 ± 0.03(-3)
^{56}Mn	1.50 ± 0.04(-4)	6.5 ± 0.4 (-4)	8.0 ± 0.4 (-4)	8.36 ± 0.09(-4)
^{59}Fe	6.44 ± 0.07(-4)	1.71 ± 0.02(-4)	8.15 ± 0.07(-4)[b]	6.31 ± 0.04(-4)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-13-82
Time: 1553

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	1.27 ± 0.07(-6)	1.0 ± 0.3 (-6)	2.3 ± 0.3 (-6)	1.6 ± 0.5 (-6)
^{58}Co	1.85 ± 0.02(-4)	2.85 ± 0.04(-4)	4.70 ± 0.04(-4)[b]	4.30 ± 0.5 (-4)
^{60}Co	1.80 ± 0.01(-3)	1.24 ± 0.02(-3)	3.04 ± 0.02(-3)[b]	2.81 ± 0.02(-3)
^{65}Zn	5.2 ± 0.1 (-5)	2.7 ± 0.1 (-5)	7.9 ± 0.1 (-5)[b]	6.0 ± 0.2 (-5)
^{91}Sr	<5(-6)	<2(-5)	a	<7(-6)
^{91m}Y	*	*	*	<9(-6)
^{93}Y	<9(-6)	<4(-5)	a	<2(-5)
^{95}Zr	<3(-6)	<3(-6)	a	<5(-6)
^{95}Nb	4.8 ± 0.3 (-6)	<9(-7)	a	3.9 ± 0.7 (-6)
^{99}Mo	<5(-6)	<8(-6)	a	<2(-5)
^{103}Ru	<1(-6)	<2(-6)	a	<3(-6)
^{106}RuD	<2(-5)	<2(-5)	a	<2(-5)
^{110m}Ag	3.9 ± 0.3 (-6)	1.64 ± 0.04(-5)	2.03 ± 0.05(-5)	<4(-5)
^{124}Sb	6.8 ± 0.3 (-6)	1.8 ± 0.3 (-6)	8.6 ± 0.4 (-6)	7.4 ± 0.6 (-6)
^{125}Sb	<3(-6)	<3(-6)	a	<4(-6)
^{129m}Te	<1(-5)	<2(-5)	a	<4(-5)
^{129}Te	<2(-3)	*	*	<8(-5)
^{131m}Te	<2(-6)	<7(-6)	a	<1(-5)
^{131}Te	*	*	*	<8(-5)
^{132}Te	<3(-7)	<7(-7)	a	<2(-6)

Table B.3-4 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTERED SAMPLES
(microcuries/gram)

Date: 10-13-82
Time: 1553

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	<8(-5)	*	a, *	<2(-5)
^{140}Ba	<5(-6)	<4(-6)	a	<2(-5)
^{140}La	<7(-7)	<6(-7)	a	<5(-7)
^{141}Ce	<5(-7)	<2(-6)	a	<2(-6)
^{143}Ce	<7(-7)	<2(-6)	a	<4(-6)
^{144}Ce	<3(-6)	<6(-6)	a	<8(-6)
^{152}Eu	<2(-6)	<3(-6)	a	<3(-6)
^{154}Eu	<2(-6)	<2(-6)	a	<3(-6)
^{155}Eu	<6(-7)	<2(-6)	a	<4(-6)
^{187}W	<3(-6)	<7(-6)	a	<7(-6)
^{239}Np	<6(-7)	<4(-6)	a	<5(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-5
UNIT NO. 1 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time					
	3-14-82 1538	3-17-82 0901	4-5-82 1532	4-12-82 1616	4-21-82 1400	5-25-82 1307
Cl-38	5.5 ± 0.2 (-3)	2.3 ± 0.2 (-3)	1.2 ± 0.2 (-3)	1.2 ± 0.4 (-3)	4.8 ± 0.2 (-3)	8 ± 1 (-4)
Ni-65	<3(-4)	<3(-4)	<2(-4)	<4(-4)	<3(-4)	<9(-5)
Sr-92	9 ± 2 (-5)	6 ± 2 (-5)	3.8 ± 0.9 (-5)	<2(-4)	9 ± 2 (-5)	6.7 ± 0.9 (-6)
Y-92	<4(-4)	<4(-4)	<2(-4)	<7(-4)	<5(-4)	<2(-4)
Nb-95m	<3(-4)	<2(-4)	<8(-5)	<3(-4)	<2(-4)	<4(-5)
Tc-99m	3.81 ± 0.06(-2)	3.57 ± 0.06(-2)	2.7 ± 0.2 (-2)	4.00 ± 0.04(-2)	2.70 ± 0.07(-2)	2.92 ± 0.01(-2)
Tc-101	1.09 ± 0.01(-2)	6.0 ± 0.1 (-3)	9.2 ± 0.2 (-3)	7.9 ± 0.2 (-3)	6.8 ± 0.1 (-3)	8.3 ± 0.6 (-4)
Tc-104	7.1 ± 0.5 (-4)	4.3 ± 0.4 (-4)	5.4 ± 0.3 (-4)	3 ± 1 (-4)	4.2 ± 0.6 (-4)	6 ± 2 (-4)
Ba-141	<3(-4)	<2(-4)	1.0 ± 0.4 (-4)	<4(-4)	<2(-4)	<5(-4)
Ba-142	<2(-3)	<9(-4)	<7(-4)	<4(-3)	<8(-4)	<5(-2)
La-142	<1(-4)	<2(-3)	<6(-5)	<2(-4)	<1(-4)	<5(-5)

Table B.3-5 (cont'd)
UNIT NO. 1 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 5-31-82 1119	6-8-82 1022
Cl-38	2.4 ± 0.1 (-3)	<2(-3)
Ni-65	<2(-4)	<2(-4)
Sr-92	6 ± 1 (-5)	7 ± 1 (-5)
Y-92	<2(-4)	<3(-4)
Nb-95m	<5(-5)	<4(-5)
Tc-99m	2.30 ± 0.01(-2)	1.17 ± 0.01(-2)
Tc-101	6.5 ± 0.1 (-3)	<6(-3)
Tc-104	5.0 ± 0.7 (-4)	<2(-3)
Ba-141	<2(-4)	<2(-3)
Ba-142	<2(-3)	*
La-142	<4(-5)	<7(-5)

* Radionuclide not measured.

Table B.3-6
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM
(microcuries/gram)

Nuclide	Date and Time					
	5-13-82 0928	5-18-82 1226	5-25-82 1400	5-31-82 1139	6-8-82 1049	10-19-82 1154
^{131}I	2.9 ± 0.6 (-7)	3.9 ± 0.4 (-7)	2.8 ± 0.7 (-7)	3 ± 1 (-7)	<2(-7)	3.1 ± 0.9 (-7)
^{132}I	1.09 ± 0.06(-5)	1.21 ± 0.05(-5)	1.49 ± 0.04(-5)	7.8 ± 0.3 (-6)	<3(-7)	3.7 ± 0.4 (-6)
^{133}I	4.3 ± 0.7 (-6)	5.0 ± 0.2 (-6)	4.6 ± 0.4 (-6)	3.4 ± 0.4 (-6)	<2(-7)	3.7 ± 0.1 (-6)
^{134}I	2.35 ± 0.09(-5)	2.7 ± 0.2 (-5)	2.7 ± 0.2 (-5)	2.06 ± 0.05(-5)	2.1 ± 0.7 (-6)	<1(-4)
^{135}I	8 ± 1 (-6)	1.10 ± 0.07(-5)	1.15 ± 0.03(-5)	6.7 ± 0.6 (-6)	<5(-7)	8.0 ± 0.4 (-6)
^{89}Rb	3.4 ± 0.2 (-5)	*	*	2.4 ± 0.3 (-5)	<3(-4)	*
^{138}Cs	<9(-6)	5 ± 1 (-5)	7 ± 2 (-5)	2.6 ± 0.9 (-5)	<3(-6)	*
^{24}Na	<8(-7)	4 ± 1 (-7)	5.1 ± 0.5 (-7)	2.5 ± 0.8 (-7)	3.0 ± 0.1 (-6)	6.0 ± 0.6 (-7)
^{51}Cr	<8(-7)	<6(-7)	<9(-7)	3.6 ± 0.7 (-6)	1.36 ± 0.06(-5)	<2(-6)
^{54}Mn	<1(-7)	<7(-8)	2.8 ± 0.9 (-7)	6 ± 2 (-7)	5.0 ± 0.2 (-6)	7.9 ± 0.7 (-7)
^{56}Mn	5 ± 2 (-6)	<3(-6)	<1(-6)	<7(-7)	1.24 ± 0.03(-5)	<3(-6)
^{59}Fe	<2(-7)	<2(-7)	<2(-7)	<4(-7)	3 ± 1 (-7)	<2(-7)
^{58}Co	<6(-8)	<6(-8)	<8(-8)	<2(-7)	2.2 ± 0.1 (-6)	3.5 ± 0.5 (-7)
^{60}Co	<2(-7)	<2(-7)	4 ± 2 (-7)	1.6 ± 0.2 (-6)	3.5 ± 0.1 (-6)	2.7 ± 0.1 (-6)
^{91}Sr	<4(-6)	8 ± 3 (-7)	1.1 ± 0.1 (-6)	<2(-6)	<5(-7)	1.6 ± 0.2 (-6)
^{110m}Ag	4 ± 2 (-8)	<5(-8)	<9(-8)	<2(-7)	1.3 ± 0.5 (-7)	<9(-8)
^{139}Ba	<2(-5)	<2(-5)	<2(-5)	<7(-6)	<2(-6)	<3(-5)

* Radionuclide not measured.

Table B.3-7
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM FILTERED SAMPLES
(microcuries/gram)

Date: 6/8/82
Time: 1051

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<9(-9)	<9(-8)	a	<2(-7)
^{132}I	*	*	*	<3(-7)
^{133}I	<4(-8)	<2(-7)	a	<2(-7)
^{134}I	*	*	*	2.1 ± 0.7 (-6)
^{135}I	<2(-6)	<4(-6)	a	<5(-7)
^{89}Rb	*	*	*	<2(-4)
^{138}Cs	*	*	*	<3(-6)
^{24}Na	<4(-8)	2.86 ± 0.09(-6)	2.88 ± 0.09(-6)	3.0 ± 0.1 (-6)
^{51}Cr	1.08 ± 0.05(-6)	1.45 ± 0.04(-5)	1.56 ± 0.04(-5)	1.36 ± 0.06(-5)
^{54}Mn	4.9 ± 0.2 (-7)	1.93 ± 0.09(-6)	2.42 ± 0.09(-6)[b]	5.0 ± 0.2 (-6)
^{59}Fe	3.0 ± 0.2 (-7)	<2(-7)	a	3 ± 1 (-7)
^{58}Co	1.3 ± 0.1 (-7)	8.7 ± 0.5 (-7)	1.00 ± 0.05(-6)[b]	2.2 ± 0.1 (-6)
^{60}Co	3.3 ± 0.2 (-7)	1.29 ± 0.08(-6)	1.62 ± 0.08(-6)[b]	3.5 ± 0.1 (-6)
^{110m}Ag	1.2 ± 0.4 (-8)	9.2 ± 0.3 (-8)	1.0 ± 0.5 (-8)	1.3 ± 0.5 (-7)
^{139}Ba	*	*	*	<2(-6)

* Radionuclide not measured.
a. Sum not calculated due to large less-than values.
b. Sum and grab values do not agree.

Table B.3-8
PERCENT FILTERED FRACTION IN UNIT NO. 1 REACTOR COOLANT
(microcuries/gram)

	Date and Time			
	6-7-82 1056	6-8-82 1024	7-1-82 0935	10-10-82 0119
^{84}Br	a	*	*	
^{131}I	0	0	0	
^{132}I	0	*	*	
^{133}I	0	0	0	
^{135}I	0	a	*	
^{24}Na	1.1	1.2	1.1 [b]	<8.7
^{51}Cr	2.1	4.1	2.5	10
^{54}Mn	42.2 [b]	20.1	50.0	46 [b]
^{56}Mn	31.2 [b]	*	*	
^{59}Fe	46.6 [b]	a	a	77
^{57}Co	0	0	0	43
^{58}Co	4.2	9.7	45.0 [b]	23 [b]
^{60}Co	48.6 [b]	36.9	58.2 [b]	42 [b]
^{65}Zn	0	0	0	6.7
^{110m}Ag	14.8	15.4	16.8	5.9
^{124}Sb	31.1	a	a	60

* Radionuclide not measured.
a. Sum not calculated due to large less-than values.
b. Sum and grab values do not agree.

Table B.3-9
PERCENT FILTERED FRACTION IN UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER INLET

Nuclide	Date and Time 09/26/82 1300	09/28/82 0950	10/08/82 1554
^{24}Na	*	*	*
^{51}Cr	13	32	27 [b]
^{54}Mn	13	30 [b]	4.8 [b]
^{56}Mn	*	*	*
^{59}Fe	*	52	53
^{57}Co	*	*	*
^{58}Co	6.9	15 [b]	1.5 [b]
^{60}Co	7.9	21 [b]	4.2 [b]
^{65}Zn	15	60	5.0 [b]
^{95}Nb	*	*	*
^{110m}Ag	40 [b]	*	<0.4
^{124}Sb	*	*	*
^{131m}Te	*	*	*
^{132}Te	*	*	*

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-9 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER INLET

Nuclide	Date and Time 10/10/82 0115	10/13/82 1206	10/13/82 1553
^{24}Na	*	*	<8.6
^{51}Cr	24	77	40
^{54}Mn	50 b	65	68 b
^{56}Mn	*	*	19
^{59}Fe	59 b	77 b	79 b
^{57}Co	*	40	55
^{58}Co	36	35	39 b
^{60}Co	49	53 b	59 b
^{65}Zn	39	27	66 b
^{95}Nb	*	85	*
^{110m}Ag	7.6	>33	19
^{124}Sb	56	77 b	79
^{131m}Te	*	<13	*
^{132}Te	*	<20	*

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-10
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0932	4-6-82 1041	4-9-82 1520	4-11-82 1004
^{84}Br	1.7 ± 0.1 (-2)	2.5 ± 0.1 (-2)	2.4 ± 0.2 (-2)	*
^{131}I	2.37 ± 0.02(-3)	2.05 ± 0.01(-3)	2.47 ± 0.05(-3)	2.23 ± 0.03(-3)
^{132}I	3.67 ± 0.04(-2)	6.05 ± 0.03(-2)	6.43 ± 0.06(-2)	5.12 ± 0.04(-2)
^{133}I	1.34 ± 0.01(-2)	2.4 ± 0.1 (-2)	3.00 ± 0.02(-2)	2.80 ± 0.03(-2)
^{134}I	1.25 ± 0.01(-1)	1.87 ± 0.05(-1)	2.00 ± 0.01(-1)	1.62 ± 0.03(-1)
^{135}I	3.5 ± 0.1 (-2)	6.00 ± 0.05(-2)	6.68 ± 0.04(-2)	5.7 ± 0.2 (-2)
^{88}Rb	<5(-3)	<4(-3)	<2(-2)	*
^{89}Rb	8 ± 1 (-3)	1.39 ± 0.08(-2)	1.1 ± 0.2 (-2)	*
^{134}Cs	9.20 ± 0.09(-3)	3.4 ± 0.1 (-5)	4.01 ± 0.08(-5)	3.8 ± 0.2 (-5)
^{136}Cs	3.05 ± 0.01(-3)	6.0 ± 0.3 (-6)	8.6 ± 0.2 (-5)	7.8 ± 0.4 (-5)
^{137}Cs	1.09 ± 0.02(-2)	5.1 ± 0.2 (-5)	6.2 ± 0.5 (-5)	5.0 ± 0.3 (-5)
^{138}Cs	2.63 ± 0.05(-2)	3.70 ± 0.04(-2)	3.62 ± 0.07(-2)	*
^{139}Cs	<1(-1)	<4(-2)	<3(-1)	*
^{24}Na	1.55 ± 0.04(-2)	2.25 ± 0.03(-2)	2.68 ± 0.04(-2)	2.4 ± 0.1 (-2)
^{51}Cr	3.93 ± 0.02(-2)	3.20 ± 0.05(-2)	3.57 ± 0.02(-2)	3.32 ± 0.05(-2)
^{54}Mn	2.16 ± 0.01(-3)	5.4 ± 0.3 (-5)	5.7 ± 0.1 (-5)	5.8 ± 0.4 (-5)
^{56}Mn	2.62 ± 0.05(-2)	<2(-3)	<2(-3)	<7(-4)
^{59}Fe	2.29 ± 0.04(-3)	2.1 ± 0.3 (-5)	1.5 ± 0.2 (-5)	1.7 ± 0.4 (-5)

Table B.3-10 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0932	4-6-82 1041	4-9-82 1520	4-11-82 1004
^{57}Co	<8(-6)	<5(-6)	<3(-6)	<4(-6)
^{58}Co	6.7 ± 0.2 (-4)	6.0 ± 0.3 (-5)	9.5 ± 0.7 (-5)	8 ± 1 (-5)
^{60}Co	1.68 ± 0.02(-3)	1.43 ± 0.02(-4)	1.64 ± 0.02(-4)	1.63 ± 0.04(-4)
^{65}Zn	2.02 ± 0.06(-4)	5.4 ± 0.3 (-5)	5.1 ± 0.2 (-5)	5.5 ± 0.5 (-5)
^{91}Sr	6.9 ± 0.08(-3)	7.2 ± 0.1 (-3)	7.1 ± 0.2 (-3)	6.5 ± 0.6 (-3)
^{91m}Y	<9(-5)	<1(-3)	8 ± 3 (-4)	<6(-3)
^{93}Y	<3(-3)	1.8 ± 0.3 (-3)	1.3 ± 0.3 (-3)	1.0 ± 0.3 (-4)
^{95}Zr	3.1 ± 0.3 (-5)	<5(-6)	<4(-6)	<6(-6)
^{95}Nb	4.4 ± 0.2 (-5)	<3(-6)	<4(-6)	<5(-6)
^{99}Mo	6.90 ± 0.04(-3)	5.2 ± 0.1 (-3)	6.11 ± 0.05(-3)	6.26 ± 0.07(-3)
^{103}Ru	7.1 ± 0.2 (-5)	3 ± 1 (-6)	4.3 ± 0.7 (-6)	<6(-6)
^{106}RuD	<6(-5)	<3(-5)	<2(-5)	<7(-5)
^{110m}Ag	2.5 ± 0.2 (-5)	4.1 ± 0.6 (-6)	7 ± 2 (-6)	5 ± 1 (-6)
^{124}Sb	2.3 ± 0.1 (-5)	<3(-6)	<2(-6)	<7(-6)
^{125}Sb	<3(-5)	<7(-6)	<7(-6)	<9(-6)
^{129m}Te	<5(-5)	<3(-5)	<3(-5)	<4(-5)
^{129}Te	<4(-2)	<2(-2)	1.6 ± 0.1 (-2)	<2(-2)
^{131m}Te	<9(-5)	<1(-4)	<7(-5)	<9(-5)
^{131}Te	<8(-3)	<5(-3)	7 ± 3 (-3)	*
^{132}Te	<3(-5)	<3(-5)	<2(-5)	<5(-5)

Table B.3-10 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0932	4-6-82 1041	4-9-82 1520	4-11-82 1004
^{139}Ba	2.86 ± 0.08(-2)	3.0 ± 0.1 (-2)	2.92 ± 0.06(-2)	2.44 ± 0.09(-2)
^{140}Ba	1.51 ± 0.03(-3)	9.80 ± 0.25(-4)	1.14 ± 0.04(-3)	1.21 ± 0.04(-3)
^{140}La	<7(-5)	<4(-5)	**	**
^{141}Ce	5.2 ± 0.2 (-5)	2.1 ± 0.2 (-5)	1.8 ± 0.1 (-5)	1.7 ± 0.7 (-5)
^{143}Ce	5 ± 2 (-5)	<4(-5)	<4(-5)	<5(-5)
^{144}Ce	3 ± 1 (-5)	<3(-5)	<3(-5)	<3(-5)
^{152}Eu	2.3 ± 0.3 (-3)	<6(-6)	<9(-6)	<3(-5)
^{154}Eu	<2(-5)	<7(-6)	<6(-6)	<2(-5)
^{155}Eu	<5(-4)	<9(-6)	<5(-5)	<2(-5)
^{187}W	5.5 ± 0.3 (-4)	<8(-5)	<5(-5)	<2(-4)
^{239}Np	7.18 ± 0.09(-3)	5.84 ± 0.07(-3)	5.34 ± 0.07(-3)	5.4 ± 0.1 (-3

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

Table B.3-11
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0810	3-26-82 0834	3-30-82 1557	4-20-82 1110	4-23-82 1614	4-23-82 1842
^{84}Br	1.84 ± 0.06(-2)	1.6 ± 0.1 (-2)	1.4 ± 0.3 (-2)	2.4 ± 0.2 (-2)	1.7 ± 0.3 (-2)	2.3 ± 0.1 (-2)
^{131}I	2.01 ± 0.07(-3)	1.54 ± 0.03(-3)	1.34 ± 0.02(-3)	2.59 ± 0.02(-3)	2.67 ± 0.03(-3)	2.71 ± 0.03(-3)
^{132}I	4.62 ± 0.02(-2)	4.39 ± 0.03(-2)	4.78 ± 0.04(-2)	6.76 ± 0.09(-2)	6.64 ± 0.05(-2)	6.61 ± 0.04(-2)
^{133}I	2.20 ± 0.03(-2)	1.89 ± 0.03(-2)	1.73 ± 0.02(-2)	3.21 ± 0.02(-2)	3.3 ± 0.1 (-2)	3.40 ± 0.07(-2)
^{134}I	1.47 ± 0.01(-1)	1.40 ± 0.01(-1)	1.55 ± 0.01(-1)	2.03 ± 0.01(-1)	1.95 ± 0.01(-1)	1.94 ± 0.01(-1)
^{135}I	5.73 ± 0.02(-2)	4.55 ± 0.06(-2)	4.01 ± 0.06(-2)	7.08 ± 0.05(-2)	7.70 ± 0.07(-2)	7.68 ± 0.07(-2)
^{89}Rb	8.6 ± 0.4 (-3)	9.2 ± 0.4 (-3)	<5(-2)	<5(-2)	*	1.17 ± 0.08(-2)
^{134}Cs	4.11 ± 0.07(-4)	4.4 ± 0.1 (-5)	3.37 ± 0.09(-5)	4.54 + 0.09(-5)	5.0 ± 0.1 (-5)	4.77 ± 0.09(-5)
^{136}Cs	1.82 ± 0.03(-4)	6.7 ± 0.7 (-5)	5.9 ± 0.2 (-5)	9.5 ± 0.3 (-6)	1.01 ± 0.03(-4)	1.03 ± 0.03(-4)
^{137}Cs	4.50 ± 0.05(-4)	5.5 ± 0.4 (-5)	5.1 ± 0.2 (-5)	6.1 ± 0.4 (-5)	6.8 ± 0.2 (-5)	7.3 ± 0.2 (-5)
^{138}Cs	2.57 ± 0.02(-2)	2.66 ± 0.04(-2)	3.02 ± 0.08(-2)	3.52 ± 0.09(-2)	3.37 ± 0.08(-2)	3.09 ± 0.05(-2)
^{139}Cs	<2(-2)	<2(-2)	*	<2(0)	<1(0)	<5(-2)
^{24}Na	4.01 ± 0.07(-2)	2.84 ± 0.04(-2)	1.94 ± 0.03(-2)	3.24 ± 0.04(-2)	3.55 ± 0.06(-2)	3.73 ± 0.05(-2)
^{51}Cr	4.25 ± 0.05(-2)	2.42 ± 0.01(-2)	3.20 ± 0.02(-2)	4.01 ± 0.07(-2)	3.59 ± 0.04(-2)	3.79 ± 0.03(-2)
^{54}Mn	5.79 ± 0.09(-5)	1.37 ± 0.06(-4)	1.03 ± 0.02(-4)	6.5 ± 0.2 (-5)	9.0 ± 0.3 (-5)	9.1 ± 0.2 (-5)
^{56}Mn	<7(-4)	2.7 ± 0.5 (-3)	1.2 ± 0.2 (-3)	<2(-3)	1.8 ± 0.3 (-3)	<4(-3)
^{59}Fe	4 ± 2 (-6)	1.9 ± 0.8 (-5)	3.3 ± 0.2 (-5)	2.7 ± 0.2 (-5)	4.6 ± 0.3 (-5)	3.8 ± 0.2 (-5)
^{57}Co	<2(-6)	<4(-6)	<8(-6)	<4(-6)	*	<5(-6)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0810	3-26-82 0834	3-30-82 1557	4-20-82 1110	4-23-82 1614	4-23-82 1842
^{58}Co	1.03 ± 0.06(-4)	2.0 ± 0.4 (-4)	1.76 ± 0.06(-4)	9.3 ± 0.9 (-5)	1.4 ± 0.2 (-4)	1.67 ± 0.09(-4)
^{60}Co	2.09 ± 0.02(-4)	4.25 ± 0.06(-4)	2.99 ± 0.03(-4)	1.86 ± 0.02(-4)	2.36 ± 0.03(-4)	2.33 ± 0.04(-4)
^{65}Zn	7.3 ± 0.2 (-5)	1.01 ± 0.05(-4)	6.6 ± 0.5 (-5)	9.0 ± 0.2 (-5)	7.8 ± 0.3 (-5)	8.7 ± 0.3 (-5)
^{91}Sr	9.1 ± 0.1 (-3)	1.17 ± 0.03(-2)	8.5 ± 0.2 (-3)	8.5 ± 0.2 (-3)	9.4 ± 0.3 (-3)	8.6 ± 0.3 (-3)
^{91m}Y	4 ± 2 (-4)	6 ± 2 (-4)	<1(-3)	<9(-4)	<4(-3)	<8(-4)
^{93}Y	<2(-3)	<3(-3)	1.1 ± 0.4 (-3)	1.97 ± 0.3 (-3)	<2(-3)	<4(-3)
^{95}Zr	<3(-6)	<8(-6)	<6(-6)	<3(-6)	*	<5(-6)
^{95}Nb	<4(-6)	<7(-6)	<4(-6)	<4(-6)	<7(-6)	<3(-6)
^{99}Mo	6.73 ± 0.06(-3)	4.2 ± 0.1 (-3)	5.17 ± 0.05(-3)	7.4 ± 0.1 (-3)	7.52 ± 0.09(-3)	7.30 ± 0.09(-3)
^{103}Ru	<4(-6)	<6(-6)	5 ± 1 (-6)	3.9 ± 0.8 (-6)	5 ± 1 (-6)	4.2 ± 0.8 (-6)
^{106}RuD	<2(-5)	<5(-5)	<3(-5)	<3(-5)	*	<2(-5)
^{110m}Ag	7.9 ± 0.6 (-6)	7 ± 2 (-6)	5 ± 1 (-6)	8 ± 1 (-6)	1.0 ± 0.1 (-5)	6.5 ± 0.9 (-5)
^{124}Sb	<2(-6)	<8(-6)	<5(-6)	<2(-6)	<2(-6)	<3(-6)
^{125}Sb	<4(-6)	<9(-6)	<4(-6)	<3(-6)	*	<5(-6)
^{129m}Te	<4(-5)	<9(-5)	<5(-5)	<4(-5)	*	<3(-5)
^{129}Te	1.4 ± 0.2 (-2)	<3(-2)	<3(-2)	2.2 ± 0.3 (-2)	3.4 ± 0.5 (-3)	*
^{131m}Te	<2(-4)	<6(-5)	<4(-5)	<9(-5)	*	<4(-4)
^{131}Te	<3(-3)	<3(-3)	<2(-2)	<1(-2)	<6(-4)	<7(-3)
^{132}Te	<2(-5)	<6(-5)	<3(-5)	<2(-5)	<2(-5)	<2(-5)
^{139}Ba	2.39 ± 0.02(-2)	3.4 ± 0.1 (-2)	3.38 ± 0.04(-2)	3.05 ± 0.05(-2)	3.08 ± 0.04(-2)	2.80 ± 0.07(-2)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0810	3-26-82 0834	3-30-82 1557	4-20-82 1110	4-23-82 1614	4-23-82 1842
^{140}Ba	1.52 ± 0.02(-3)	2.53 ± 0.08(-3)	1.12 ± 0.07(-3)	1.73 ± 0.03(-3)	1.82 ± 0.07(-4)	1.79 ± 0.05(-3)
^{140}La	<1(-5)	**	**	**	***	***
^{141}Ce	1.5 ± 0.2 (-5)	4.0 ± 0.4 (-5)	2.5 ± 0.2 (-5)	1.8 ± 0.3 (-5)	2.0 ± 0.3 (-5)	1.7 ± 0.2 (-5)
^{143}Ce	<4(-5)	<3(-5)	2.0 ± 0.9 (-5)	<3(-5)	<3(-4)	<2(-4)
^{144}Ce	<4(-5)	<3(-5)	<3(-5)	<2(-5)	*	<4(-5)
^{152}Eu	<1(-5)	<2(-5)	<1(-5)	<2(-5)	1.0 ± 0.3 (-3)	<1(-5)
^{154}Eu	6 ± 3 (-6)	<2(-5)	<8(-6)	<5(-6)	*	<1(-5)
^{155}Eu	<4(-5)	<2(-5)	<3(-5)	<4(-4)	*	<2(-5)
^{187}W	8 ± 4 (-5)	<8(-5)	<9(-5)	<8(-5)	<9(-4)	<9(-4)
^{239}Np	6.69 ± 0.03(-3)	9.5 ± 0.1 (-3)	6.38 ± 0.09(-3)	6.5 ± 0.1 (-3)	6.46 ± 0.06(-3)	7.02 ± 0.08(-3)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

*** Not able to evaluate.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 4-23-82 2227	4-24-82 0124	4-24-82 0430	4-24-82 0850	4-24-82 1152	4-24-82 1532
^{84}Br	2.2 ± 0.1 (-2)	3.9 ± 0.5 (-3)	<4(-4)	<4(-4)	<4(-4)	*
^{131}I	3.18 ± 0.04(-3)	1.60 ± 0.01(-2)	4.29 ± 0.02(-2)	5.75 ± 0.03(-2)	6.03 ± 0.02(-2)	5.46 ± 0.03(-2)
^{132}I	6.86 ± 0.08(-2)	7.74 ± 0.05(-2)	8.40 ± 0.07(-2)	8.13 ± 0.04(-2)	7.40 ± 0.04(-2)	*
^{133}I	3.53 ± 0.09(-2)	4.57 ± 0.09(-2)	5.75 ± 0.02(-2)	5.40 ± 0.03(-2)	5.20 ± 0.02(-2)	4.01 ± 0.05(-2)
^{134}I	2.00 ± 0.01(-1)	8.04 ± 0.06(-2)	1.07 ± 0.01(-2)	3.1 ± 0.6 (-4)	1.8 ± 0.8 (-4)	*
^{135}I	7.27 ± 0.07(-2)	5.66 ± 0.05(-2)	4.38 ± 0.04(-2)	2.73 ± 0.02(-2)	1.93 ± 0.02(-2)	*
^{88}Rb	*	<2(-5)	1.1 ± 0.3 (-3)	*	*	*
^{89}Rb	1.2 ± 0.2 (-2)	<3(-3)	<2(-3)	<9(-4)	<2(-3)	*
^{134}Cs	5.8 ± 0.2 (-5)	9.6 ± 0.3 (-4)	3.78 ± 0.02(-3)	6.22 ± 0.06(-3)	5.99 ± 0.03(-3)	5.83 ± 0.04(-3)
^{136}Cs	1.14 ± 0.04(-4)	4.4 ± 0.2 (-4)	1.19 ± 0.02(-3)	1.94 ± 0.02(-3)	1.88 ± 0.03(-3)	1.96 ± 0.02(-3)
^{137}Cs	7.6 ± 0.2 (-5)	1.17 ± 0.02(-3)	4.59 ± 0.06(-3)	7.1 ± 0.1 (-3)	7.84 ± 0.05(-3)	7.55 ± 0.05(-3)
^{138}Cs	2.89 ± 0.04(-2)	8.0 ± 0.2 (-3)	<4(-4)	<3(-4)	<3(-4)	*
^{139}Cs	<2(-1)	<3(-2)	<1(-2)	<5(-3)	<2(-2)	*
^{24}Na	4.00 ± 0.06(-2)	3.07 ± 0.06(-2)	2.34 ± 0.04(-2)	1.70 ± 0.04(-2)	1.11 ± 0.02(-2)	7.2 ± 0.3 (-3)
^{51}Cr	3.72 ± 0.04(-2)	6.35 ± 0.03(-2)	3.50 ± 0.02(-2)	2.03 ± 0.03(-2)	5.86 ± 0.09(-3)	2.7 ± 0.1 (-3)
^{54}Mn	3.36 ± 0.04(-4)	8.13 ± 0.07(-3)	1.38 ± 0.04(-4)	2.80 ± 0.05(-4)	7.02 ± 0.05(-4)	1.57 ± 0.02(-3)
^{56}Mn	8.36 ± 0.04(-3)	4.41 ± 0.06(-2)	2.9 ± 0.2 (-3)	2.53 ± 0.05(-3)	2.75 ± 0.05(-3)	*
^{59}Fe	3.84 ± 0.06(-4)	9.3 ± 0.1 (-3)	<3(-5)	6.4 ± 0.9 (-5)	1.8 ± 0.1 (-4)	3.98 ± 0.07(-4)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	4-23-82 2227	4-24-82 0124	4-24-82 0430	4-24-82 0850	4-24-82 1152	4-24-82 1532
^{58}Co	2.0 ± 0.2 (-4)	2.31 ± 0.06(-3)	<1(-3)	2.9 ± 0.1 (-4)	5.5 ± 0.8 (-4)	1.14 ± 0.04(-3)
^{60}Co	3.96 ± 0.07(-4)	5.54 ± 0.07(-3)	2.92 ± 0.07(-4)	4.18 ± 0.06(-4)	8.2 ± 0.2 (-4)	1.83 ± 0.03(-3)
^{65}Zn	8.7 ± 0.4 (-5)	4.2 ± 0.1 (-4)	1.21 ± 0.08(-4)	8.9 ± 0.9 (-5)	8.93 ± 0.06(-5)	1.48 ± 0.06(-4)
^{91}Sr	1.34 ± 0.04(-2)	3.01 ± 0.03(-2)	2.40 ± 0.02(-2)	1.69 ± 0.02(-2)	1.20 ± 0.02(-2)	1.1 ± 0.4 (-2)
^{91m}Y	<8(-4)	<2(-3)	7 ± 2 (-4)	4.1 ± 0.8 (-4)	<5(-4)	*
^{93}Y	<3(-3)	<3(-3)	<2(-3)	<3(-3)	<1(-3)	1.6 ± 0.1 (-1)
^{95}Zr	<7(-6)	2.57 ± 0.06(-4)	<2(-5)	<2(-5)	<2(-5)	<2(-5)
^{95}Nb	1.3 ± 0.2 (-5)	3.01 ± 0.06(-4)	<1(-5)	<9(-6)	<2(-5)	2.6 ± 0.3 (-5)
^{99}Mo	8.2 ± 0.1 (-3)	1.12 ± 0.02(-2)	1.08 ± 0.02(-2)	1.10 ± 0.02(-2)	7 ± 2 (-3)	5.5 ± 0.1 (-3)
^{103}Ru	1.8 ± 0.2 (-5)	5.93 ± 0.06(-4)	<1(-5)	<2(-5)	1.6 ± 0.3 (-5)	3.9 ± 0.4 (-5)
^{106}RuD	<3(-5)	<5(-4)	<7(-5)	<9(-5)	<6(-5)	*
^{110m}Ag	8 ± 1 (-6)	1.1 ± 0.4 (-5)	1.5 ± 0.2 (-5)	2.0 ± 0.3 (-5)	2.0 ± 0.2 (-5)	1.8 ± 0.5 (-5)
^{124}Sb	5 ± 2 (-6)	7.7 ± 0.6 (-5)	<2(-5)	<2(-5)	<8(-6)	<2(-5)
^{125}Sb	*	<3(-5)	*	*	*	*
^{129m}Te	*	<1(-4)	*	*	*	*
^{129}Te	1.3 ± 0.1 (-2)	<2(-2)	<2(-3)	<2(-3)	<2(-3)	*
^{131m}Te	*	<2(-3)	*	*	*	*
^{131}Te	<6(-3)	4 ± 2 (-3)	<2(-3)	*	*	*
^{132}Te	<3(-5)	1.7 ± 0.3 (-4)	<8(-5)	<3(-4)	<4(-4)	<2(-4)
^{139}Ba	3.39 ± 0.05(-2)	2.6 ± 0.1 (-2)	3.2 ± 0.7 (-3)	7 ± 1 (-4)	<4(-4)	*

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 4-23-82 2227	4-24-82 0124	4-24-82 0430	4-24-82 0850	4-24-82 1152	4-24-82 1532
^{140}Ba	3.2 ± 0.1 (-3)	2.19 ± 0.03(-2)	2.6 ± 0.2 (-2)	3.2 ± 0.3 (-2)	2.9 ± 0.4 (-2)	2.43 ± 0.05(-2)
^{140}La	***	***	**	**	**	**
^{141}Ce	3.1 ± 0.3 (-5)	2.31 ± 0.08(-4)	<4(-5)	<6(-5)	<2(-5)	<2(-5)
^{143}Ce	<2(-4)	4 ± 1 (-4)	<3(-4)	<2(-4)	<2(-4)	<3(-4)
^{144}Ce	<5(-5)	<4(-4)	<3(-4)	<3(-4)	<2(-4)	*
^{152}Eu	<2(-5)	<3(-5)	<5(-5)	<5(-5)	<3(-5)	*
^{154}Eu	*	<3(-5)	*	*	*	*
^{155}Eu	*	<7(-5)	*	*	*	*
^{187}W	<7(-3)	3.1 ± 0.4 (-3)	<4(-4)	1.8 ± 0.2 (-3)	<6(-4)	<6(-4)
^{239}Np	7.76 ± 0.08(-3)	2.02 ± 0.01(-2)	2.44 ± 0.02(-2)	4.18 ± 0.04(-2)	3.4 ± 0.5 (-2)	4.0 ± 0.5 (-2)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

*** Not able to evaluate.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	4-29-82 1500	5-1-82 0854	9-27-82 0930	9-28-82 1500	9-29-82 0940	9-29-82 2010
^{84}Br	<4(-5)	<8(-6)	<3(-5)	*	*	<8(-5)
^{131}I	1.06 ± 0.02(-3)	3.61 ± 0.02(-4)	<2(-6)	<3(-6)	<3(-6)	<8(-6)
^{132}I	6.20 ± 0.04(-3)	1.99 ± 0.01(-3)	<3(-6)	*	<3(-5)	1.0 ± 0.2 (-5)
^{133}I	1.8 ± 0.6 (-5)	<3(-6)	<2(-6)	<6(-6)	<5(-6)	6.7 ± 0.3 (-5)
^{134}I	<2(-5)	<4(-6)	<9(-6)	*	<4(-4)	4.5 ± 0.1 (-4)
^{135}I	<3(-5)	<4(-6)	<4(-6)	<2(-4)	<1(-5)	1.60 ± 0.09(-4)
^{88}Rb	<1(-4)	<2(-5)	<5(-5)	*	*	<5(-5)
^{89}Rb	<7(-5)	<4(-5)	<3(-4)	*	*	1.4 ± 0.2 (-4)
^{134}Cs	1.09 ± 0.02(-3)	2.60 ± 0.01(-4)	7.0 ± 0.6 (-6)	1.4 ± 0.1 (-5)	1.3 ± 0.2 (-5)	<9(-6)
^{136}Cs	2.19 ± 0.06(-4)	4.2 ± 0.1 (-5)	<3(-6)	<4(-6)	<4(-6)	<8(-6)
^{137}Cs	1.22 ± 0.02(-3)	3.16 ± 0.02(-4)	8 ± 2 (-6)	1.6 ± 0.2 (-5)	1.6 ± 0.3 (-5)	<2(-5)
^{138}Cs	<2(-5)	<8(-6)	<4(-6)	*	*	2.2 ± 0.1 (-4)
^{139}Cs	<1(-3)	<2(-3)	<3(-3)	*	*	<9(-4)
^{24}Na	<3(-6)	<2(-7)	<2(-7)	<2(-6)	<9(-7)	8 ± 2 (-6)
^{51}Cr	3.4 ± 0.4 (-4)	5.3 ± 0.3 (-5)	<2(-5)	<2(-5)	<2(-5)	4 ± 2 (-5)
^{54}Mn	1.41 ± 0.03(-3)	5.23 ± 0.03(-6)	4.02 ± 0.07(-4)	2.63 ± 0.03(-4)	2.31 ± 0.05(-4)	5.60 ± 0.07(-4)
^{56}Mn	<2(-5)	<3(-6)	<3(-6)	<3(-3)	<2(-5)	4.8 ± 0.2 (-4)
^{59}Fe	1.3 ± 0.1 (-4)	1.37 ± 0.07(-5)	9 ± 1 (-6)	<5(-6)	<9(-6)	<4(-5)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 1500	5-1-82 0854	9-27-82 0930	9-28-82 1500	9-29-82 0940	9-29-82 2010
^{57}Co	<2(-5)	8 ± 2 (-7)	<2(-6)	<2(-6)	<2(-6)	<4(-6)
^{58}Co	6.6 ± 0.9 (-4)	2.30 ± 0.03(-4)	1.50 ± 0.01(-4)	1.14 ± 0.02(-4)	8.7 ± 0.3 (-5)	6.3 ± 0.5 (-5)
^{60}Co	2.40 ± 0.02(-3)	1.05 ± 0.01(-3)	2.55 ± 0.04(-3)	2.00 ± 0.03(-3)	1.65 ± 0.01(-3)	1.37 ± 0.02(-3)
^{65}Zn	2.0 ± 0.1 (-4)	1.10 ± 0.02(-4)	7.3 ± 0.3 (-5)	8.7 ± 0.7 (-5)	5.6 ± 0.5 (-5)	1.9 ± 0.6 (-5)
^{91}Sr	<4(-5)	<6(-6)	<7(-6)	<7(-5)	<3(-5)	5.8 ± 0.8 (-5)
^{91m}Y	<2(-5)	<4(-6)	<6(-6)	*	<7(-4)	<7(-6)
^{93}Y	<2(-4)	<2(-5)	<2(-5)	<2(-4)	<5(-5)	<5(-5)
^{95}Zr	<3(-5)	<3(-6)	<3(-6)	<6(-6)	<6(-6)	<2(-5)
^{95}Nb	<2(-5)	1.9 ± 0.8 (-6)	<2(-6)	<3(-6)	<4(-6)	<2(-5)
^{99}Mo	<2(-4)	<2(-5)	<9(-6)	<2(-5)	<3(-5)	<5(-5)
^{103}Ru	<2(-5)	2.0 ± 0.6 (-6)	<3(-6)	<3(-6)	<3(-6)	<8(-6)
^{106}RuD	3.8 ± 0.7 (-4)	<1(-5)	<2(-5)	<4(-5)	<4(-5)	<7(-5)
^{110m}Ag	<2(-5)	<2(-6)	<3(-6)	<6(-6)	<6(-6)	<2(-5)
^{124}Sb	1.0 ± 0.4 (-6)	6 ± 3 (-7)	<2(-6)	<3(-6)	<3(-6)	<2(-5)
^{125}Sb	<3(-5)	<3(-6)	<6(-6)	<7(-6)	<6(-6)	<3(-5)
^{129m}Te	<2(-4)	<2(-5)	<3(-5)	<4(-5)	<4(-5)	<2(-4)
^{129}Te	<2(-4)	<4(-5)	<4(-5)	*	*	<9(-5)
^{131m}Te	<7(-5)	<1(-5)	<6(-6)	<2(-5)	<3(-5)	<4(-5)
^{131}Te	<2(-4)	<4(-5)	<5(-5)	*	*	<9(-5)
^{132}Te	<1(-5)	2.3 ± 0.6 (-6)	<8(-7)	<2(-6)	<2(-6)	<5(-6)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	4-29-82 1500	5-1-82 0854	9-27-82 0930	9-28-82 1500	9-29-82 0940	9-29-82 2010
^{139}Ba	<4(-5)	<6(-6)	<5(-6)	*	<8(-5)	4.1 ± 0.1 (-4)
^{140}Ba	<2(-4)	3.6 ± 0.3 (-5)	<7(-6)	<9(-6)	<2(-5)	<2(-5)
^{140}La	1.0 ± 0.2 (-6)	7.3 ± 0.5 (-6)	<5(-7)	<2(-6)	<4(-6)	8 ± 3 (-6)
^{141}Ce	<3(-5)	1.77 ± 0.05(-5)	<2(-6)	<2(-6)	<4(-6)	<7(-6)
^{143}Ce	<3(-5)	<3(-6)	<4(-6)	<9(-6)	<5(-6)	<8(-6)
^{144}Ce	<6(-5)	<7(-6)	<7(-6)	<7(-6)	<2(-5)	<3(-5)
^{152}Eu	<3(-5)	<2(-6)	<3(-6)	<5(-6)	<5(-6)	8.8 ± 0.6 (-5)
^{154}Eu	<4(-5)	<2(-6)	<3(-6)	<7(-6)	<6(-6)	<2(-5)
^{155}Eu	<3(-3)	<3(-6)	<3(-6)	<4(-6)	<4(-6)	<7(-6)
^{187}W	<4(-5)	<5(-6)	<6(-6)	<2(-5)	<2(-5)	<3(-5)
^{239}Np	3.1 ± 0.1 (-4)	8.8 ± 0.2 (-5)	<2(-6)	<4(-6)	<7(-6)	<2(-5)

* Radionuclide not measured.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	9-30-82 0830	10-1-82 1015	10-2-82 1040	10-2-82 1240	10-2-82 2030	10-4-82 0930
^{84}Br	4.5 ± 0.5 (-4)	<4(-4)	*	*	*	6.3 ± 0.6 (-3)
^{131}I	1.02 ± 0.06(-4)	5.0 ± 0.2 (-5)	8.3 ± 0.4 (-5)	9.3 ± 0.2 (-5)	2.21 ± 0.04(-4)	6.26 ± 0.03(-4)
^{132}I	1.40 ± 0.09(-4)	3.3 ± 0.1 (-4)	*	*	*	6.5 ± 0.1 (-3)
^{133}I	8.0 ± 0.1 (-4)	4.54 ± 0.06(-4)	1.16 ± 0.02(-3)	1.36 ± 0.03(-3)	4.40 ± 0.06(-3)	1.12 ± 0.01(-2)
^{134}I	3.81 ± 0.06(-3)	1.6 ± 0.4 (-4)	*	*	4.5 ± 0.1 (-4)	<4(-4)
^{135}I	1.68 ± 0.03(-3)	2.9 ± 0.1 (-4)	<7(-3)	<7(-3)	*	2.52 ± 0.03(-2)
^{88}Rb	<2(-4)	<2(-3)	*	*	*	<2(-3)
^{89}Rb	1.7 ± 0.4 (-4)	<6(-3)	*	*	*	3.0 ± 0.3 (-3)
^{134}Cs	2.3 ± 0.7 (-5)	<8(-6)	<2(-5)	8 ± 2 (-6)	6 ± 2 (-6)	<3(-6)
^{136}Cs	<2(-5)	<1(-5)	<2(-5)	<1(-5)	<4(-6)	1.0 ± 0.1 (-5)
^{137}Cs	<3(-5)	<1(-5)	1.8 ± 0.3 (-5)	1.1 ± 0.2 (-5)	9 ± 2 (-6)	5.5 ± 0.8 (-6)
^{138}Cs	6.3 ± 0.2 (-4)	<7(-5)	*	*	*	8.9 ± 0.1 (-3)
^{139}Cs	<4(-3)	*	*	*	*	5.1 ± 0.5 (-2)
^{24}Na	8.9 ± 0.7 (-5)	4.2 ± 0.3 (-5)	1.5 ± 0.1 (-4)	2.12 ± 0.09(-4)	5.5 ± 0.5 (-4)	1.70 ± 0.03(-3)
^{51}Cr	9 ± 6 (-4)	7 ± 2 (-5)	3.4 ± 0.2 (-4)	3 ± 1 (-4)	4.4 ± 0.1 (-4)	1.16 ± 0.03(-3)
^{54}Mn	1.45 ± 0.04(-3)	7.2 ± 0.2 (-4)	3.58 ± 0.06(-3)	2.10 ± 0.03(-3)	4.6 ± 0.1 (-4)	3.31 ± 0.05(-4)
^{56}Mn	4.65 ± 0.08(-3)	1.18 ± 0.07(-4)	*	*	*	4.7 ± 0.3 (-3)
^{59}Fe	8 ± 2 (-5)	<2(-5)	1.58 ± 0.06(-4)	1.04 ± 0.05(-4)	1.2 ± 0.2 (-5)	3.1 ± 0.2 (-5)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 9-30-82 0830	10-1-82 1015	10-2-82 1040	10-2-82 1240	10-2-82 2030	10-4-82 0930
^{57}Co	<1(-5)	<9(-5)	<8(-5)	<9(-6)	<7(-6)	<2(-6)
^{58}Co	3.0 ± 0.2 (-4)	4.77 ± 0.09(-4)	1.53 ± 0.02(-3)	8.2 ± 0.1 (-4)	1.87 ± 0.07(-4)	7.2 ± 0.2 (-5)
^{60}Co	4.15 ± 0.05(-3)	5.69 ± 0.08(-3)	2.04 ± 0.02(-2)	1.09 ± 0.01(-2)	2.10 ± 0.02(-3)	7.06 ± 0.06(-4)
^{65}Zn	1.6 ± 0.2 (-4)	1.2 ± 0.2 (-4)	5.2 ± 0.2 (-4)	3.06 ± 0.09(-4)	1.46 ± 0.05(-4)	9.4 ± 0.4 (-5)
^{91}Sr	5.2 ± 0.2 (-4)	1.7 ± 0.1 (-4)	2.2 ± 0.7 (-3)	<1(-3)	<8(-3)	6.9 ± 0.1 (-3)
^{91m}Y	5 ± 1 (-5)	<9(-5)	*	*	*	<6(-4)
^{93}Y	<2(-4)	<1(-4)	<3(-3)	<1(-3)	<2(-2)	9 ± 2 (-4)
^{95}Zr	<3(-5)	<2(-5)	2.3 ± 0.6 (-5)	<2(-5)	<7(-6)	<3(-6)
^{95}Nb	1.21 ± 0.07(-4)	<1(-5)	2.2 ± 0.4 (-5)	1.8 ± 0.3 (-5)	<6(-6)	<5(-6)
^{99}Mo	7.3 ± 0.9 (-4)	<8(-5)	<2(-4)	1.2 ± 0.2 (-4)	4.1 ± 0.2 (-4)	1.53 ± 0.02(-3)
^{103}Ru	<3(-5)	<7(-6)	1.1 ± 0.3 (-5)	1.0 ± 0.2 (-5)	<3(-6)	<4(-6)
^{106}RuD	<5(-4)	<9(-5)	<2(-4)	<5(-5)	<3(-5)	<3(-5)
^{110m}Ag	<6(-5)	1.3 ± 0.4 (-5)	1.2 ± 0.3 (-5)	1.3 ± 0.2 (-5)	4.1 ± 0.2 (-5)	4.00 ± 0.09(-5)
^{124}Sb	<4(-5)	<8(-6)	<2(-5)	<6(-6)	<3(-6)	2.4 ± 0.9 (-6)
^{125}Sb	<2(-4)	<2(-5)	<3(-5)	<2(-5)	<8(-6)	<3(-6)
^{129m}Te	<2(-4)	<7(-5)	<2(-4)	<2(-4)	<3(-5)	<2(-5)
^{129}Te	<1(-3)	<3(-4)	*	*	*	<3(-2)
^{131m}Te	<9(-5)	<6(-5)	<2(-4)	<9(-5)	<2(-4)	<5(-5)
^{131}Te	<2(-4)	<2(-3)	*	*	*	<2(-3)
^{132}Te	<2(-5)	<8(-6)	<6(-6)	<6(-6)	<2(-5)	<9(-6)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 9-30-82 0830	10-1-82 1015	10-2-82 1040	10-2-82 1240	10-2-82 2030	10-4-82 0930
^{139}Ba	1.88 ± 0.03 (-3)	<3(-5)	*	*	*	1.86 ± 0.07(-2)
^{140}Ba	<4(-4)	5 ± 1 (-5)	7 ± 1 (-5)	8.5 ± 0.7 (-5)	2.23 ± 0.06(-4)	4.28 ± 0.06(-4)
^{140}La	3.4 ± 0.9 (-5)	<5(-6)	<3(-5)	*	*	**
^{141}Ce	<3(-5)	<5(-6)	5 ± 2 (-6)	5 ± 1 (-6)	1.2 ± 0.2 (-5)	1.44 ± 0.08(-5)
^{143}Ce	<4(-5)	<2(-5)	<3(-5)	<3(-5)	<3(-5)	<2(-5)
^{144}Ce	<8(-5)	<3(-5)	4 ± 1 (-5)	2.1 ± 0.7 (-5)	<2(-5)	<2(-5)
^{152}Eu	6.9 ± 0.2 (-4)	<2(-5)	<2(-5)	<9(-6)	<7(-6)	<3(-6)
^{154}Eu	<4(-5)	<2(-5)	<3(-5)	<1(-5)	<5(-6)	<4(-6)
^{155}Eu	<3(-5)	<8(-6)	<3(-5)	<2(-5)	<7(-6)	<5(-6)
^{187}W	<7(-5)	<3(-5)	<2(-4)	<1(-4)	<2(-4)	<4(-5)
^{239}Np	2.8 ± 0.4 (-4)	5.30 ± 0.08(-4)	1.22 ± 0.01(-3)	1.32 ± 0.01(-3)	2.07 ± 0.03(-3)	3.83 ± 0.02(-3)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-5-82 1502	10-6-82 1617	10-17-82 0155	10-17-82 0340	10-17-82 0440	10-17-82 0538
^{84}Br	5.2 ± 0.6 (-3)	1.3 ± 0.1 (-2)	8 ± 3 (-5)	3.4 ± 0.2 (-4)	2.5 ± 0.5 (-4)	6.1 ± 0.4 (-4)
^{131}I	6.8 ± 0.1 (-4)	7.42 ± 0.07(-4)	1.38 ± 0.03(-4)	1.92 ± 0.07(-4)	1.45 ± 0.03(-4)	2.17 ± 0.04(-4)
^{132}I	1.05 ± 0.02(-2)	1.57 ± 0.02(-2)	6.89 ± 0.03(-3)	6.29 ± 0.04(-3)	6.19 ± 0.04(-3)	6.49 ± 0.05(-3)
^{133}I	1.10 ± 0.01(-2)	9 ± 1 (-3)	1.12 ± 0.02(-4)	2.75 ± 0.08(-4)	2.84 ± 0.09(-4)	5.5 ± 0.2 (-4)
^{134}I	5.64 ± 0.05(-2)	9.52 ± 0.07(-2)	1.08 ± 0.02(-3)	1.94 ± 0.04(-3)	2.46 ± 0.04(-3)	3.66 ± 0.05(-3)
^{135}I	2.38 ± 0.02(-2)	3.10 ± 0.02(-2)	3.48 ± 0.07(-4)	7.4 ± 0.2 (-4)	9.2 ± 0.2 (-4)	1.43 ± 0.02(-3)
^{88}Rb	<1(-3)	<4(-3)	<7(-5)	<2(-4)	<2(-4)	<3(-4)
^{89}Rb	2.8 ± 0.3 (-3)	<3(-2)	<2(-4)	2.7 ± 0.8 (-4)	<6(-4)	3.0 ± 0.4 (-4)
^{134}Cs	<5(-6)	2.8 ± 0.2 (-6)	<3(-6)	<5(-6)	<4(-6)	<3(-6)
^{136}Cs	1.3 ± 0.1 (-5)	1.47 ± 0.05(-5)	<5(-6)	<5(-6)	<4(-6)	<3(-6)
^{137}Cs	5.9 ± 0.9 (-6)	4.6 ± 0.4 (-6)	<5(-6)	<7(-6)	4 ± 2 (-6)	<6(-6)
^{138}Cs	6.8 ± 0.3 (-3)	1.69 ± 0.04(-2)	<2(-4)	4.2 ± 0.1 (-4)	5.0 ± 0.1 (-4)	7.8 ± 0.3 (-4)
^{139}Cs	<4(-2)	<3(-1)	<3(-3)	<9(-3)	<1(-2)	<1(-2)
^{24}Na	2.03 ± 0.05(-3)	3.41 ± 0.03(-3)	1.66 ± 0.06(-5)	3.5 ± 0.2 (-5)	4.6 ± 0.2 (-5)	6.5 ± 0.3 (-5)
^{51}Cr	1.62 ± 0.02(-3)	1.77 ± 0.01(-3)	6.5 ± 0.1 (-4)	1.28 ± 0.02(-3)	1.22 ± 0.01(-3)	1.94 ± 0.05(-3)
^{54}Mn	1.34 ± 0.03(-4)	2.06 ± 0.03(-4)	1.79 ± 0.03(-3)	2.44 ± 0.03(-3)	1.84 ± 0.02(-3)	1.42 ± 0.03(-3)
^{56}Mn	2.1 ± 0.1 (-3)	3.7 ± 0.2 (-3)	1.60 ± 0.04(-3)	2.21 ± 0.05(-3)	2.59 ± 0.07(-3)	2.37 ± 0.06(-3)
^{59}Fe	1.0 ± 0.2 (-5)	2.05 ± 0.07(-5)	1.84 ± 0.05(-4)	2.68 ± 0.05(-4)	2.34 ± 0.03(-4)	1.41 ± 0.03(-4)
^{57}Co	<1(-5)	<3(-6)	<2(-5)	<2(-5)	<5(-6)	<2(-5)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	10-5-82 1502	10-6-82 1617	10-17-82 0155	10-17-82 0340	10-17-82 0440	10-17-82 0538
^{58}Co	6.1 ± 0.4 (-5)	7.3 ± 0.7 (-5)	4.90 ± 0.05(-4)	3.82 ± 0.07(-4)	3.41 ± 0.09(-4)	2.7 ± 0.3 (-4)
^{60}Co	4.22 ± 0.03(-4)	4.99 ± 0.05(-4)	3.72 ± 0.05(-3)	3.48 ± 0.04(-3)	2.89 ± 0.03(-3)	2.14 ± 0.02(-3)
^{65}Zn	6.7 ± 0.3 (-5)	6.1 ± 0.2 (-5)	1.87 ± 0.03(-4)	2.0 ± 0.1 (-4)	1.97 ± 0.03(-4)	1.4 ± 0.1 (-4)
^{91}Sr	6.94 ± 0.09(-3)	7.70 ± 0.08(-3)	1.18 ± 0.08(-4)	2.11 ± 0.08(-4)	3.0 ± 0.1 (-4)	4.0 ± 0.2 (-4)
^{91m}Y	<4(-4)	*	<3(-5)	2.3 ± 0.7 (-5)	<3(-5)	4 ± 1 (-5)
^{93}Y	8 ± 1 (-4)	8 ± 2 (-4)	5 ± 2 (-5)	<7(-5)	<6(-5)	<8(-5)
^{95}Zr	<4(-6)	<2(-6)	8 ± 2 (-6)	1.8 ± 0.3 (-5)	1.2 ± 0.2 (-5)	<9(-6)
^{95}Nb	<4(-6)	2.0 ± 0.3 (-6)	1.7 ± 0.1 (-5)	2.1 ± 0.2 (-5)	1.6 ± 0.2 (-5)	1.1 ± 0.1 (-5)
^{99}Mo	2.30 ± 0.03(-3)	2.41 ± 0.02(-3)	4.51 ± 0.09(-4)	5.4 ± 0.4 (-4)	5.8 ± 0.1 (-4)	6.6 ± 0.2 (-4)
^{103}Ru	<3(-6)	2.6 ± 0.3 (-6)	1.99 ± 0.09(-5)	2.3 ± 0.3 (-5)	2.1 ± 0.1 (-5)	1.2 ± 0.1 (-5)
^{106}RuD	<2(-5)	<8(-6)	<3(-5)	1.7 ± 0.5 (-4)	<4(-5)	<5(-5)
^{110m}Ag	2.1 ± 0.1 (-5)	1.43 ± 0.03(-5)	<6(-6)	<2(-5)	5 ± 1 (-6)	<9(-6)
^{124}Sb	<2(-6)	6 ± 2 (-7)	4.5 ± 0.5 (-6)	<5(-6)	4.3 ± 0.7 (-6)	<6(-6)
^{125}Sb	<4(-6)	<2(-6)	<2(-5)	<1(-5)	<7(-6)	<8(-6)
^{129m}Te	<3(-5)	<8(-6)	<3(-5)	<5(-5)	<4(-5)	<3(-5)
^{129}Te	<2(-2)	<2(-6)	<3(-4)	<4(-4)	<6(-4)	<7(-4)
^{131m}Te	<3(-5)	<4(-5)	<2(-5)	<5(-5)	<4(-5)	<3(-5)
^{131}Te	<2(-3)	<7(-3)	<2(-4)	<2(-4)	<3(-4)	<3(-4)
^{132}Te	<3(-5)	<2(-5)	3.0 ± 0.7 (-5)	<2(-5)	<2(-5)	<2(-5)
^{139}Ba	1.62 ± 0.06(-2)	2.55 ± 0.03(-2)	6.6 ± 0.2 (-4)	1.08 ±0.01 (-3)	1.33 ± 0.02(-3)	1.84 ± 0.02(-3)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-5-82 1502	10-6-82 1617	10-17-82 0155	10-17-82 0340	10-17-82 0440	10-17-82 0538
^{140}Ba	5.43 ± 0.07(-4)	5.3 ± 0.5 (-4)	1.19 ± 0.03(-4)	1.35 ± 0.07(-4)	1.44 ± 0.04(-4)	1.65 ± 0.04(-4)
^{140}La	<5(-4)	**	1.5 ± 0.1 (-5)	2.5 ± 0.5 (-5)	1.2 ± 0.5 (-5)	4.5 ± 0.6 (-5)
^{141}Ce	1.3 ± 0.1 (-5)	1.36 ± 0.07(-5)	9 ± 1 (-6)	1.8 ± 0.2 (-5)	1.0 ± 0.1 (-5)	1.7 ± 0.1 (-5)
^{143}Ce	<3(-5)	<2(-5)	<8(-6)	<8(-6)	1.2 ± 0.4 (-5)	<2(-5)
^{144}Ce	<2(-5)	<1(-5)	<4(-5)	<4(-5)	1.8 ± 0.6 (-5)	<3(-5)
^{152}Eu	<4(-6)	<4(-6)	<5(-6)	<6(-6)	<6(-6)	<5(-6)
^{154}Eu	<6(-6)	<3(-6)	<4(-6)	<5(-6)	<6(-6)	<6(-6)
^{155}Eu	<4(-6)	<2(-6)	<7(-6)	<8(-6)	<6(-6)	<4(-6)
^{187}W	<4(-5)	8 ± 1 (-5)	<3(-5)	<5(-5)	<4(-5)	<4(-5)
^{239}Np	5.42 ± 0.02(-3)	4.84 ± 0.02(-3)	3.84 ± 0.04(-3)	4.67 ± 0.03(-3)	4.51 ± 0.02(-3)	4.99 ± 0.04(-3)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-17-82 0641	10-17-82 0739	10-17-82 0840	10-17-82 0934
^{84}Br	5.1 ± 0.4 (-4)	7.1 ± 0.5 (-4)	3.7 ± 0.7 (-4)	<3(-4)
^{131}I	1.71 ± 0.05(-4)	2.72 ± 0.05(-4)	1.95 ± 0.03(-4)	2.23 ± 0.09(-4)
^{132}I	6.50 ± 0.05(-3)	6.78 ± 0.04(-3)	6.69 ± 0.04(-3)	6.61 ± 0.05(-3)
^{133}I	6.21 ± 0.06(-4)	8.7 ± 0.3 (-4)	8.6 ± 0.1 (-4)	9.67 ± 0.08(-4)
^{134}I	4.40 ± 0.05(-3)	4.97 ± 0.06(-3)	4.89 ± 0.07(-3)	5.35 ± 0.08(-3)
^{135}I	1.86 ± 0.02(-3)	2.20 ± 0.02(-3)	2.41 ± 0.03(-3)	2.60 ± 0.05(-3)
^{88}Rb	<2(-4)	<2(-4)	<2(-4)	<3(-4)
^{89}Rb	3.4 ± 0.3 (-4)	4.1 ± 0.4 (-4)	4.1 ± 0.3 (-4)	5.1 ± 0.2 (-4)
^{134}Cs	3 ± 1 (-6)	<3(-6)	2.1 ± 0.9 (-6)	<2(-6)
^{136}Cs	<4(-6)	<5(-6)	<4(-6)	<3(-6)
^{137}Cs	<3(-6)	<5(-6)	2.6 ± 0.5 (-6)	3.8 ± 0.8 (-6)
^{138}Cs	5.5 ± 0.5 (-4)	9.0 ± 0.3 (-4)	8.0 ± 0.5 (-4)	1.04 ± 0.03(-3)
^{139}Cs	<3(-3)	<7(-3)	<3(-3)	2.5 ± 0.9(-3)
^{24}Na	7.6 ± 0.3 (-5)	8.5 ± 0.5 (-5)	1.03 ± 0.03(-4)	1.00 ± 0.06(-4)
^{51}Cr	2.03 ± 0.01(-3)	3.47 ± 0.06(-3)	3.58 ± 0.02(-3)	4.2 ± 0.1 (-3)
^{54}Mn	6.11 ± 0.08(-4)	8.0 ± 0.1 (-4)	1.53 ± 0.02(-4)	2.70 ± 0.06(-4)
^{56}Mn	1.94 ± 0.06(-3)	1.49 ± 0.04(-3)	4.4 ± 0.2 (-4)	7.3 ± 0.2 (-4)
^{59}Fe	6.2 ± 0.3 (-5)	1.04 ± 0.02(-4)	8.9 ± 0.9 (-6)	2.6 ± 0.2 (-5)
^{57}Co	<6(-6)	<2(-5)	<3(-6)	<2(-5)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-17-82 0641	10-17-82 0739	10-17-82 0840	10-17-82 0934
^{58}Co	1.48 ± 0.05(-4)	1.18 ± 0.02(-4)	5.00 ± 0.09(-5)	7.2 ± 0.1 (-5)
^{60}Co	1.15 ± 0.01(-3)	1.15 ± 0.02(-3)	3.07 ± 0.02(-4)	4.71 ± 0.06(-4)
^{65}Zn	1.15 ± 0.03(-4)	1.05 ± 0.08(-4)	6.4 ± 0.2 (-5)	6.7 ± 0.2 (-5)
^{91}Sr	5.4 ± 0.2 (-4)	5.8 ± 0.2 (-4)	6.5 ± 0.1 (-4)	7.2 ± 0.2 (-4)
^{91m}Y	<3(-5)	6.6 ± 0.9 (-5)	6 ± 1 (-5)	6 ± 1 (-5)
^{93}Y	1.7 ± 0.8 (-4)	<2(-4)	<1(-4)	<2(-4)
^{95}Zr	4 ± 2 (-6)	<7(-6)	<3(-6)	<3(-6)
^{95}Nb	5 ± 1 (-6)	8 ± 1 (-6)	<4(-6)	1.6 ± 0.1 (-4)
^{99}Mo	7.8 ± 0.2 (-4)	1.07 ± 0.03(-3)	1.06 ± 0.01(-3)	1.16 ± 0.04(-3)
^{103}Ru	7.8 ± 0.6 (-6)	<2(-5)	<2(-6)	3.7 ± 0.8 (-6)
^{106}RuD	<2(-5)	<3(-5)	<2(-5)	<3(-5)
^{110m}Ag	4.4 ± 0.9 (-6)	6 ± 1 (-6)	5.5 ± 0.5 (-6)	7.6 ± 0.6 (-6)
^{124}Sb	<4(-6)	<5(-6)	<2(-6)	<2(-6)
^{125}Sb	<5(-6)	<4(-6)	<3(-6)	<3(-6)
^{129m}Te	<3(-5)	<3(-5)	<2(-5)	<2(-5)
^{129}Te	<8(-4)	<9(-4)	<8(-4)	<1(-3)
^{131m}Te	<3(-5)	<3(-5)	<2(-5)	<2(-5)
^{131}Te	<9(-5)	<2(-4)	<4(-4)	<2(-4)
^{132}Te	<2(-5)	<2(-5)	<1(-5)	<3(-5)
^{139}Ba	2.11 ± 0.04(-3)	2.32 ± 0.01(-3)	2.40 ± 0.01(-3)	2.64 ± 0.03(-3)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-17-82 0641	10-17-82 0739	10-17-82 0840	10-17-82 0934
^{140}Ba	2.03 ± 0.03(-4)	2.37 ± 0.04(-4)	2.32 ± 0.03(-4)	2.59 ± 0.04(-4)
^{140}La	<5(-6)	5.9 ± 0.4 (-5)	**	8.0 ± 0.6 (-5)
^{141}Ce	4 ± 1 (-6)	1.4 ± 0.1 (-5)	<8(-6)	<8(-6)
^{143}Ce	<2(-5)	<9(-6)	<7(-6)	<5(-6)
^{144}Ce	<2(-5)	<3(-5)	<2(-5)	<3(-5)
^{152}Eu	<4(-6)	<5(-6)	<4(-6)	<5(-6)
^{154}Eu	<5(-6)	<4(-6)	<4(-6)	<4(-6)
^{155}Eu	<3(-6)	<1(-5)	<5(-6)	<2(-5)
^{187}W	<2(-5)	<4(-5)	<2(-5)	<2(-5)
^{239}Np	4.57 ± 0.02(-3)	4.21 ± 0.03(-3)	3.40 ± 0.02(-3)	3.26 ± 0.02(-3)

** Parent-daughter corrected value $\leq$ 0.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	10-17-82 1036	10-17-82 1143	10-17-82 1226	10-17-82 1344	10-17-82 1501	10-17-82 1633
^{84}Br	7.0 ± 0.6 (-4)	6.1 ± 0.4 (-4)	7.6 ± 0.4 (-4)	5.2 ± 0.8 (-4)	8.3 ± 0.7 (-4)	6.8 ± 0.5 (-4)
^{131}I	2.27 ± 0.07(-4)	2.2 ± 0.1 (-4)	2.22 ± 0.03(-4)	3.13 ± 0.05(-4)	2.27 ± 0.05 (-4)	2.72 ± 0.08(-4)
^{132}I	6.88 ± 0.06(-3)	6.85 ± 0.05(-3)	6.99 ± 0.06(-3)	6.55 ± 0.06(-3)	7.65 ± 0.07 (-3)	6.61 ± 0.08(-3)
^{133}I	1.18 ± 0.01(-3)	1.58 ± 0.04(-3)	1.42 ± 0.03(-3)	1.68 ± 0.04(-3)	1.57 ± 0.02 (-3)	1.82 ± 0.03(-3)
^{134}I	7.22 ± 0.07(-3)	6.68 ± 0.08(-3)	7.38 ± 0.07(-3)	7.60 ± 0.09(-3)	8.3 ± 0.1 (-3)	6.39 ± 0.06(-3)
^{135}I	3.02 ± 0.03(-3)	3.28 ± 0.05(-3)	3.54 ± 0.05(-3)	3.74 ± 0.04(-3)	3.95 ± 0.06 (-3)	3.79 ± 0.03(-3)
^{88}Rb	<1(-4)	<2(-4)	<2(-4)	<3(-4)	<2(-4)	<3(-4)
^{89}Rb	5.2 ± 0.2 (-4)	4.5 ± 0.2 (-4)	6.0 ± 0.3 (-4)	5.9 ± 0.4 (-4)	8.3 ± 0.8 (-4)	3.8 ± 0.3 (-4)
^{134}Cs	<2(-6)	<2(-6)	<2(-6)	1.2 ± 0.2 (-6)	<2(-6)	<3(-6)
^{136}Cs	<3(-6)	<3(-6)	<4(-6)	1.9 ± 0.4 (-6)	<5(-6)	<6(-6)
^{137}Cs	2.3 ± 0.5 (-6)	<5(-5)	3.6 ± 0.7 (-6)	2.0 ± 0.2 (-6)	2.1 ± 0.5 (-6)	3.5 ± 0.6 (-7)
^{138}Cs	1.07 ± 0.04(-3)	1.03 ± 0.04(-3)	1.08 ± 0.05(-3)	1.19 ± 0.05(-3)	1.31 ± 0.07 (-3)	1.06 ± 0.03(-3)
^{139}Cs	6.1 ± 0.7 (-3)	<7(-4)	6.8 ± 0.5 (-3)	<3(-3)	7 ± 2 (-3)	<2(-3)
^{24}Na	1.30 ± 0.03(-4)	1.41 ± 0.05(-4)	1.35 ± 0.04(-4)	1.47 ± 0.04(-4)	1.44 ± 0.06 (-4)	1.53 ± 0.05(-4)
^{51}Cr	3.84 ± 0.04(-3)	4.2 ± 0.3 (-3)	3.79 ± 0.02(-3)	4.16 ± 0.09(-3)	3.60 ± 0.01 (-3)	3.7 ± 0.1 (-3)
^{54}Mn	1.57 ± 0.03(-4)	1.3 ± 0.2 (-4)	1.25 ± 0.03(-4)	1.23 ± 0.02(-4)	1.10 ± 0.02 (-4)	1.00 ± 0.01(-5)
^{56}Mn	6.8 ± 0.2 (-4)	6.8 ± 0.2 (-4)	6.6 ± 0.2 (-4)	6.3 ± 0.3 (-4)	7.9 ± 0.5 (-4)	6.9 ± 0.2 (-4)
^{59}Fe	1.0 ± 0.1 (-5)	7 ± 2 (-6)	9 ± 2 (-6)	7.2 ± 0.6 (-6)	<6(-6)	<5(-6)
^{57}Co	<2(-6)	<2(-5)	<3(-6)	<2(-5)	<1(-6)	<6(-6)

Table 8.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 10-17-82 1036	10-17-82 1143	10-17-82 1226	10-17-82 1344	10-17-82 1501	10-17-82 1633
^{58}Co	6.1 ± 0.1 (-5)	5.5 ± 0.3 (-5)	5.5 ± 0.2 (-5)	5.0 ± 0.3 (-5)	5.5 ± 0.2 (-5)	5.6 ± 0.2 (-5)
^{60}Co	3.62 ± 0.03(-4)	3.55 ± 0.07(-4)	3.32 ± 0.03(-4)	3.02 ± 0.05(-4)	4.08 ± 0.04 (-4)	2.88 ± 0.05(-4)
^{65}Zn	6.2 ± 0.2 (-5)	5.9 ± 0.3 (-5)	6.7 ± 0.3 (-5)	5.81 ± 0.07(-5)	6.7 ± 0.2 (-5)	6.6 ± 0.2 (-5)
^{91}Sr	9.0 ± 0.2 (-4)	8.9 ± 0.3 (-4)	1.03 ± 0.02(-3)	1.05 ± 0.03(-3)	1.21 ± 0.03 (-3)	1.18 ± 0.02(-3)
^{91m}Y	<6(-5)	9 ± 1 (-5)	3 ± 1 (-5)	6 ± 1 (-5)	<4(-5)	1.0 ± 0.3 (-4)
^{93}Y	<2(-4)	<2(-4)	<3(-4)	<9(-5)	<2(-4)	<2(-4)
^{95}Zr	<3(-6)	<3(-6)	<3(-6)	<2(-6)	<2(-6)	<2(-6)
^{95}Nb	<2(-6)	<4(-6)	<2(-6)	<2(-6)	2.1 ± 0.6 (-6)	<3(-6)
^{99}Mo	1.16 ± 0.02(-3)	10 ± 1 (-4)	1.23 ± 0.02(-3)	1.11 ± 0.02(-3)	1.07 ± 0.02 (-3)	1.01 ± 0.05(-3)
^{103}Ru	<3(-6)	<2(-6)	1.8 ± 0.8 (-6)	7 ± 2 (-7)	3 ± 1 (-6)	<2(-6)
^{106}RuD	<3(-5)	<3(-5)	<2(-5)	<2(-5)	<2(-5)	<2(-5)
^{110m}Ag	1.0 ± 0.1 (-5)	1.30 ± 0.09(-5)	1.45 ± 0.09(-5)	1.97 ± 0.02(-5)	1.97 ± 0.07 (-5)	2.3 ± 0.1 (-5)
^{124}Sb	<2(-6)	<2(-6)	<2(-6)	<5(-7)	<4(-6)	<3(-6)
^{125}Sb	<3(-6)	<4(-6)	<6(-6)	<2(-6)	<3(-6)	<5(-6)
^{129m}Te	<3(-5)	<3(-5)	<2(-5)	<6(-6)	<2(-5)	<3(-5)
^{129}Te	<3(-3)	<2(-3)	<8(-4)	<9(-4)	<2(-3)	<2(-3)
^{131m}Te	<1(-5)	<2(-5)	<2(-5)	<6(-6)	2.4 ± 0.7 (-5)	<8(-5)
^{131}Te	<3(-4)	<3(-4)	<3(-4)	<2(-4)	<3(-4)	<2(-4)
^{132}Te	<2(-5)	<5(-5)	<2(-5)	<2(-5)	<1(-5)	<1(-5)
^{139}Ba	3.2 ± 0.1 (-3)	3.38 ± 0.08(-3)	3.6 ± 0.1 (-3)	3.59 ± 0.05(-3)	3.78 ± 0.03 (-3)	3.57 ± 0.05(-3)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time					
	10-17-82 1036	10-17-82 1143	10-17-82 1226	10-17-82 1344	10-17-82 1501	10-17-82 1633
^{140}Ba	3.05 ± 0.04(-4)	3.19 ± 0.05(-4)	3.19 ± 0.07(-4)	3.48 ± 0.07(-4)	3.64 ± 0.04 (-4)	3.65 ± 0.06(-4)
^{140}La	<3(-5)	8.8 ± 0.5 (-5)	**	**	**	5.9 ± 0.8 (-5)
^{141}Ce	3.1 ± 0.9 (-6)	<7(-6)	4 ± 1 (-6)	1.2 ± 0.1 (-5)	<4(-6)	<4(-6)
^{143}Ce	<5(-6)	<6(-6)	<5(-6)	<2(-6)	<7(-6)	<2(-5)
^{144}Ce	<2(-5)	<4(-5)	<2(-5)	<8(-6)	<2(-5)	<2(-5)
^{152}Eu	<5(-6)	<5(-6)	<4(-6)	<2(-6)	<4(-6)	<4(-6)
^{154}Eu	<4(-6)	<6(-6)	<4(-6)	<2(-6)	<5(-6)	<4(-6)
^{155}Eu	<5(-6)	<7(-6)	<6(-6)	<2(-5)	<7(-6)	<3(-6)
^{187}W	<2(-5)	<2(-5)	<2(-5)	<6(-6)	<3(-5)	<5(-5)
^{239}Np	3.50 ± 0.01(-3)	3.8 ± 0.1 (-3)	3.65 ± 0.04(-3)	3.63 ± 0.04(-3)	3.52 ± 0.04 (-3)	3.75 ± 0.05(-3)

** Parent-daughter corrected value ≤ 0.

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time				
	10-18-82 0907	10-18-82 1213	10-18-82 1602	10-19-82 1221	10-24-82 1340
^{84}Br	8.8 ± 0.4 (-3)	6.3 ± 0.4 (-3)	7.0 ± 0.4 (-3)	1.6 ± 0.1 (-2)	6.5 ± 0.8 (-3)
^{131}I	1.50 ± 0.05(-3)	9.0 ± 0.2 (-4)	7.6 ± 0.2 (-4)	9.4 ± 0.2 (-4)	2.0 ± 0.1 (-3)
^{132}I	9.10 ± 0.07(-3)	9.06 ± 0.09(-3)	5.7 ± 0.8 (-3)	1.63 ± 0.03(-2)	4.15 ± 0.03(-2)
^{133}I	1.51 ± 0.03(-2)	1.64 ± 0.04(-2)	2.0 ± 0.2 (-2)	1.59 ± 0.02(-2)	1.89 ± 0.01(-2)
^{134}I	7.42 ± 0.06(-2)	6.89 ± 0.04(-2)	7.22 ± 0.05(-2)	1.33 ± 0.01(-1)	4.66 ± 0.05(-2)
^{135}I	2.87 ± 0.03(-2)	3.04 ± 0.03(-2)	3.34 ± 0.04(-2)	5.00 ± 0.07(-2)	3.29 ± 0.03(-2)
^{88}Rb	<7(-4)	<3(-3)	<2(-3)	<3(-3)	<8(-3)
^{89}Rb	2.4 ± 0.4 (-3)	4.1 ± 0.2 (-3)	4.0 ± 0.2 (-3)	8.8 ± 0.5 (-3)	<2(-2)
^{134}Cs	<1(-4)	<8(-6)	<6(-6)	2.4 ± 0.9 (-6)	<1(-4)
^{136}Cs	<2(-4)	1.3 ± 0.2 (-5)	<2(-5)	3.3 ± 0.2 (-5)	<2(-4)
^{137}Cs	<3(-4)	<6(-6)	<7(-6)	7.9 ± 0.7 (-6)	<7(-4)
^{138}Cs	9.5 ± 0.2 (-3)	1.09 ± 0.01(-2)	1.11 ± 0.02(-2)	2.48 ± 0.04(-2)	4.6 ± 0.4 (-3)
^{139}Cs	5.0 ± 0.2(-2)	5.9 ± 0.4 (-2)	6.1 ± 0.7(-2)	<2(-2)	*
^{24}Na	1.36 ± 0.05(-3)	1.8 ± 0.5 (-3)	2.44 ± 0.04(-3)	9.0 ± 0.1 (-3)	3.06 ± 0.04(-2)
^{51}Cr	1.3 ± 0.1 (-2)	4.4 ± 0.3 (-5)	4.66 ± 0.05(-3)	4.84 ± 0.04(-3)	7.0 ± 0.4 (-3)
^{54}Mn	<1(-3)	8 ± 1 (-4)	9.5 ± 0.6 (-4)	3.42 ± 0.04(-4)	4.2 ± 0.7 (-4)
^{56}Mn	7.5 ± 0.2 (-3)	1.28 ± 0.03(-2)	1.08 ± 0.02(-2)	1.37 ± 0.05(-2)	5.0 ± 0.5 (-3)
^{59}Fe	<3(-4)	1.10 ± 0.04(-4)	1.66 ± 0.04(-4)	7.0 ± 0.2 (-5)	<7(-4)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time				
	10-18-82 0907	10-18-82 1213	10-18-82 1602	10-19-82 1221	10-24-82 1340
^{57}Co	<9(-5)	<2(-5)	<3(-5)	<8(-6)	<3(-4)
^{58}Co	<2(-4)	1.04 ± 0.07(-4)	1.44 ± 0.05(-4)	1.11 ± 0.09(-4)	<9(-4)
^{60}Co	7.6 ± 0.3 (-4)	8.7 ± 0.1 (-4)	9.5 ± 0.4 (-4)	6.42 ± 0.08(-4)	6.0 ± 0.6 (-4)
^{65}Zn	<3(-3)	9.3 ± 0.5 (-5)	1.02 ± 0.04(-4)	9.6 ± 0.3 (-5)	<2(-3)
^{91}Sr	5.3 ± 0.1 (-3)	5.8 ± 0.2 (-3)	6.5 ± 0.1 (-3)	1.04 ± 0.04(-2)	1.81 ± 0.03(-2)
^{91m}Y	3.6 ± 0.7 (-4)	3 ± 2 (-4)	<5(-4)	<1(-3)	<2(-3)
^{93}Y	<2(-3)	8 ± 1 (-4)	6.5 ± 0.9 (-4)	<3(-3)	<3(-3)
^{95}Zr	<1(-4)	<2(-5)	<8(-6)	<4(-6)	<2(-4)
^{95}Nb	1.90 ± 0.04(-3)	<2(-5)	<1(-4)	<8(-6)	<2(-3)
^{99}Mo	2.9 ± 0.6 (-3)	1.56 ± 0.03(-3)	1.34 ± 0.02(-3)	2.64 ± 0.03(-3)	1.21 ± 0.03(-2)
^{103}Ru	<8(-5)	<9(-6)	1.1 ± 0.1 (-5)	5.2 ± 0.7 (-6)	<1(-4)
^{106}RuD	<6(-3)	<9(-5)	<1(-4)	<2(-5)	4 ± 1 (-3)
^{110m}Ag	<3(-4)	3.8 ± 0.2 (-5)	4.0 ± 0.2 (-5)	1.94 ± 0.07(-5)	<3(-4)
^{124}Sb	<3(-4)	<9(-6)	<7(-6)	1.9 ± 0.9 (-6)	<2(-4)
^{125}Sb	<2(-3)	<3(-5)	<3(-5)	<1(-5)	<2(-3)
^{129m}Te	<4(-3)	<5(-5)	<6(-5)	<3(-5)	<2(-3)
^{129}Te	<1(-2)	<2(-2)	<2(-2)	<3(-2)	<8(-3)
^{131m}Te	<1(-3)	<3(-5)	<3(-5)	<2(-4)	<2(-3)
^{131}Te	<2(-3)	<2(-3)	<2(-3)	<2(-3)	<1(-2)
^{132}Te	<5(-4)	<9(-5)	<2(-5)	<2(-5)	<2(-4)

Table B.3-11 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time				
	10-18-82 0907	10-18-82 1213	10-18-82 1602	10-19-82 1221	10-24-82 1340
^{139}Ba	1.94 ± 0.09(-2)	2.01 ± 0.05(-2)	2.11 ± 0.05(-2)	3.78 ± 0.05(-2)	1.66 ± 0.04(-2)
^{140}Ba	<9(-3)	5.16 ± 0.08(-4)	4.66 ± 0.06(-4)	5.6 ± 0.4 (-4)	6.0 ± 0.3 (-3)
^{140}La	1.18 ± 0.05(-3)	9.4 ± 0.4 (-4)	1.6 ± 0.6 (-5)	<6(-4)	9 ± 4 (-5)
^{141}Ce	<1(-3)	4.5 ± 0.3 (-5)	3.5 ± 0.3 (-5)	2.78 ± 0.09(-5)	<3(-4)
^{143}Ce	<3(-4)	<3(-5)	<4(-5)	<4(-5)	<3(-4)
^{144}Ce	<2(-3)	<3(-4)	<4(-5)	<3(-5)	<2(-2)
^{152}Eu	8.0 ± 0.1 (-3)	<2(-5)	<1(-5)	<6(-6)	<6(-4)
^{154}Eu	<3(-4)	<2(-5)	<2(-5)	<6(-6)	<5(-4)
^{155}Eu	<2(-3)	<3(-5)	<4(-5)	<4(-5)	<4(-3)
^{187}W	<3(-4)	1.0 ± 0.1 (-4)	<9(-5)	<3(-4)	<8(-4)
^{239}Np	6 ± 1 (-3)	3.6 ± 0.9 (-3)	2.99 ± 0.01(-3)	4.12 ± 0.03(-3)	1.75 ± 0.01(-2)

* Radionuclide not measured.

Table B.3-12
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 1614

Nuclide	Filter	Filtrate	Sum	Grab
^{84}Br	*	*	*	1.7 ± 0.3 (-2)
^{131}I	1.02 ± 0.09(-5)	2.81 ± 0.02(-3)	2.82 ± 0.02(-3)b	2.67 ± 0.03(-3)
^{132}I	1.35 ± 0.09(-4)	6.14 ± 0.06(-2)	6.15 ± 0.06(-2)b	6.64 ± 0.05(-2)
^{133}I	9.9 ± 0.2 (-5)	3.34 ± 0.04(-2)	3.35 ± 0.04(-2)	3.3 ± 0.1 (-2)
^{134}I	1.6 ± 0.6 (-3)	2.1 ± 0.2 (-1)	2.1 ± 0.2 (-1)	1.95 ± 0.01(-1)
^{135}I	2.15 ± 0.07(-4)	7.18 ± 0.04(-2)	7.20 ± 0.04(-2)b	7.70 ± 0.07(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	2.2 ± 0.6 (-6)	3.64 ± 0.06(-5)	3.86 ± 0.08(-5)b	5.0 ± 0.1 (-5)
^{136}Cs	7 ± 2 (-6)	7.4 ± 0.3 (-5)	8.0 ± 0.3 (-5)b	1.01 ± 0.03(-4)
^{137}Cs	7 ± 2 (-6)	5.5 ± 0.1 (-5)	6.2 ± 0.2 (-5)	6.8 ± 0.2 (-5)
^{138}Cs	*	*	*	3.37 ± 0.08(-2)
^{139}Cs	*	*	*	*
^{24}Na	5.84 ± 0.09(-4)	2.81 ± 0.04(-2)	2.87 ± 0.04(-2)b	3.55 ± 0.06(-2)
^{51}Cr	5.2 ± 0.3 (-4)	3.6 ± 0.1 (-2)	3.7 ± 0.1 (-2)	3.59 ± 0.04(-2)
^{54}Mn	3.5 ± 0.3 (-5)	2.6 ± 0.1 (-5)	6.1 ± 0.4 (-5)b	9.0 ± 0.3 (-5)
^{56}Mn	5.8 ± 0.2 (-4)	<3(-3)	a	1.8 ± 0.3 (-3)
^{59}Fe	3.7 ± 0.2 (-5)	8 ± 1 (-6)	4.5 ± 0.3 (-5)	4.6 ± 0.3 (-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 1614

Nuclide	Filter	Filtrate	Sum	Grab
^{57}Co	*	*	*	*
^{58}Co	1.3 ± 0.1 (-5)	5.6 ± 0.5 (-5)	6.9 ± 0.5 (-5)b	1.4 ± 0.2 (-4)
^{60}Co	3.0 ± 0.1 (-5)	7.7 ± 0.1 (-5)	1.07 ± 0.02(-4)b	2.36 ± 0.03(-4)
^{65}Zn	7 ± 3 (-6)	4.0 ± 0.3 (-5)	4.7 ± 0.4 (-5)b	7.8 ± 0.3 (-5)
^{91}Sr	4.56 ± 0.08(-4)	3.0 ± 0.1 (-3)	3.4 ± 0.1 (-3)b	9.4 ± 0.3 (-3)
^{91m}Y	*	*	*	*
^{93}Y	6.4 ± 0.9 (-5)	1.0 ± 0.4 (-3)	1.1 ± 0.4 (-3)	<2(-3)
^{95}Zr	*	*	*	*
^{95}Nb	*	*	*	*
^{99}Mo	2.7 ± 0.4 (-5)	7.7 ± 0.2 (-3)	7.7 ± 0.2 (-3)	7.52 ± 0.09(-3)
^{103}Ru	2.7 ± 0.8 (-6)	<2(-6)	a	5 ± 1 (-6)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	<2(-3)	<2(-1)	a	3.4 ± 0.5 (-3)
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	3.5 ± 0.6 (-6)	<1(-4)	a	<2(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 1614

Nuclide	Filter	Filtrate	Sum	Grab
^{139}Ba	7.3 ± 0.1 (-3)	1.2 ± 0.6 (-2)	2.0 ± 0.6 (-2)b	3.08 ± 0.04(-2)
^{140}Ba	4.17 ± 0.05(-4)	7.8 ± 0.1 (-4)	1.20 ± 0.01(-3)b	1.73 ± 0.03(-3)
^{140}La	*	*	*	4 ± 1 (-4)
^{141}Ce	3.5 ± 0.5 (-6)	1.2 ± 0.1 (-5)	1.5 ± 0.2 (-5)	2.0 ± 0.3 (-5)
^{143}Ce	5 ± 1 (-6)	<2(-4)	a	<3(-4)
^{144}Ce	*	*	*	*
^{152}Eu	<5(-6)	<5(-6)	a	1.0 ± 0.3 (-3)
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	*	*	*	*
^{239}Np	8.7 ± 0.2 (-5)	3 ± 1 (-3)	3 ± 1 (-3)b	6.46 ± 0.06(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 4-23-82 Time: 2233			
Nuclide	Filter	Filtrate	Sum	Grab
^{84}Br	<2(-4)	1.6 ± 0.3 (-2)	1.6 ± 0.3 (-2)	2.2 ± 0.1 (-2)
^{131}I	1.8 ± 0.2 (-5)	3.07 ± 0.02(-3)	3.09 ± 0.02(-3)	3.18 ± 0.04(-3)
^{132}I	1.80 ± 0.03(-4)	6.45 ± 0.09(-2)	6.47 ± 0.09(-2)[b]	6.86 ± 0.08(-2)
^{133}I	1.33 ± 0.05(-4)	3.37 ± 0.02(-2)	3.38 ± 0.02(-2)	3.53 ± 0.09(-2)
^{134}I	4.8 ± 0.1 (-4)	1.69 ± 0.01(-1)	1.69 ± 0.01(-1)[b]	2.00 ± 0.01(-1)
^{135}I	2.63 ± 0.08(-4)	7.14 ± 0.06(-2)	7.17 ± 0.06(-2)	7.27 ± 0.07(-2)
^{88}Rb	*	*	*	*
^{89}Rb	<9(-4)	<4(-1)	a	1.2 ± 0.2 (-2)
^{134}Cs	<8(-6)	3.78 ± 0.07(-5)	3.8 ± 0.8 (-5)[b]	5.8 ± 0.2 (-5)
^{136}Cs	8 ± 3 (-6)	8.2 ± 0.4 (-5)	9.0 ± 0.5 (-5)[b]	1.14 ± 0.04(-4)
^{137}Cs	<2(-5)	5.9 ± 0.1 (-5)	6 ± 1 (-5)[b]	7.6 ± 0.2 (-5)
^{138}Cs	1.39 ± 0.03(-3)	1.6 ± 0.1 (-2)	1.7 ± 0.1 (-2)[b]	2.89 ± 0.04(-2)
^{139}Cs	*	*	*	1.2 ± 0.3 (-1)
^{24}Na	4.79 ± 0.09(-4)	3.23 ± 0.05(-2)	3.28 ± 0.05(-2)[b]	4.00 ± 0.06(-2)
^{51}Cr	1.47 ± 0.02(-3)	3.46 ± 0.02(-2)	3.61 ± 0.02(-2)	3.72 ± 0.04(-2)
^{54}Mn	2.42 ± 0.07(-4)	7.3 ± 0.1 (-5)	3.15 ± 0.07(-4)[b]	3.36 ± 0.04(-4)
^{56}Mn	4.22 ± 0.04(-3)	2.1 ± 0.3 (-3)	6.3 ± 0.3 (-3)[b]	8.36 ± 0.04(-3)
^{59}Fe	3.03 ± 0.04(-4)	6.4 ± 0.2 (-5)	3.67 ± 0.05(-4)[b]	3.84 ± 0.06(-4)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 2233

Nuclide	Filter	Filtrate	Sum	Grab
^{57}Co	*	*	*	*
^{58}Co	7.6 ± 0.2 (-5)	6.7 ± 0.5 (-5)	1.43 ± 0.05(-4)b	2.0 ± 0.2 (-4)
^{60}Co	1.63 ± 0.08(-4)	1.03 ± 0.01(-4)	2.66 ± 0.03(-4)b	3.96 ± 0.07(-4)
^{65}Zn	1.5 ± 0.4 (-5)	4.1 ± 0.3 (-5)	5.6 ± 0.5 (-5)b	8.7 ± 0.4 (-5)
^{91}Sr	8.03 ± 0.09(-4)	4.6 ± 0.2 (-3)	5.4 ± 0.2 (-3)b	1.34 ± 0.04(-2)
^{91m}Y	3.3 ± 0.3 (-4)	3 ± 2 (-3)	3 ± 2 (-3)b	<8(-4)
^{93}Y	6 ± 2 (-5)	<3(-3)	a	<3(-3)
^{95}Zr	*	*	*	*
^{95}Nb	1.1 ± 0.2 (-5)	<3(-6)	a	1.3 ± 0.2 (-5)
^{99}Mo	7 ± 1 (-5)	7.5 ± 0.8 (-3)	7.6 ± 0.8 (-3)	8.2 ± 0.1 (-3)
^{103}Ru	2.0 ± 0.2 (-5)	2.5 ± 0.7 (-6)	2.3 ± 0.3 (-5)	1.8 ± 0.2 (-5)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	<2(-5)	<3(-6)	a	5 ± 2 (-6)
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	<8(-4)	6 ± 3 (-3)	6 ± 3 (-3)b	1.3 ± 0.1 (-2)
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	1.6 ± 0.1 (-5)	<2(-4)	a	<3(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 2233

Nuclide	Filter	Filtrate	Sum	Grab
^{139}Ba	6.99 ± 0.02(-3)	2.02 ± 0.05(-2)	2.72 ± 0.05(-2)b	3.39 ± 0.05(-2)
^{140}Ba	6.5 ± 0.1 (-4)	2.08 ± 0.08(-3)	8.6 ± 0.1 (-4)b	3.2 ± 0.1 (-3)
^{140}La	*	<2(-4)	a, *	1.3 ± 0.1 (-3)
^{141}Ce	<9(-6)	1.4 ± 0.2 (-5)	1.4 ± 0.9 (-5)b	3.1 ± 0.3 (-5)
^{143}Ce	1.6 ± 0.2 (-5)	<3(-4)	a	<2(-4)
^{144}Ce	8.4 ± 0.6 (-5)	<2(-5)	a	<2(-5)
^{152}Eu	8 ± 2 (-5)	<4(-6)	8 ± 2 (-5)b	<2(-5)
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	9.2 ± 0.6 (-5)	<6(-4)	a	<1(-3)
^{239}Np	1.60 ± 0.03(-4)	7.2 ± 0.2 (-3)	7.4 ± 0.2 (-3)b	7.76 ± 0.08(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0430

Nuclide	Filter	Filtrate	Sum	Grab
^{84}Br	*	*	*	*
^{131}I	4.14 ± 0.03(-4)	4.51 ± 0.07(-2)	4.55 ± 0.07(-2)	4.29 ± 0.02(-2)
^{132}I	7.3 ± 0.6 (-4)	9.1 ± 0.1 (-2)	9.2 ± 0.1 (-2)	8.40 ± 0.07(-2)
^{133}I	5.30 ± 0.04(-4)	5.84 ± 0.04(-2)	5.89 ± 0.04(-2)	5.75 ± 0.02(-2)
^{134}I	*	*	*	1.07 ± 0.01(-2)
^{135}I	4.1 ± 0.2 (-4)	4.55 ± 0.04(-2)	4.59 ± 0.04(-2)	4.38 ± 0.04(-2)
^{88}Rb	*	*	*	1.1 ± 0.3 (-3)
^{89}Rb	*	*	*	*
^{134}Cs	2.83 ± 0.02(-4)	2.85 ± 0.03(-3)	3.13 ± 0.03(-3)[b]	3.78 ± 0.02(-3)
^{136}Cs	8.8 ± 0.2 (-5)	1.04 ± 0.02(-3)	1.13 ± 0.02(-3)	1.19 ± 0.02(-3)
^{137}Cs	3.91 ± 0.06(-4)	3.80 ± 0.05(-3)	4.19 ± 0.05(-3)	4.59 ± 0.06(-3)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	4.38 ± 0.06(-4)	2.19 ± 0.03(-2)	2.23 ± 0.03(-2)	2.34 ± 0.04(-2)
^{51}Cr	1.6 ± 0.1 (-4)	3.6 ± 0.1 (-2)	3.6 ± 0.1 (-2)	3.50 ± 0.02(-2)
^{54}Mn	3.2 ± 0.4 (-5)	5.7 ± 0.2 (-5)	8.9 ± 0.4 (-5)[b]	1.38 ± 0.04(-4)
^{56}Mn	5 ± 2 (-4)	1.3 ± 0.2 (-3)	1.8 ± 0.3 (-3)[b]	2.9 ± 0.2 (-3)
^{59}Fe	1.6 ± 0.2 (-5)	<1(-5)	a	<3(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0430

Nuclide	Filter	Filtrate	Sum	Grab
^{57}Co	*	*	*	*
^{58}Co	*	*	*	*
^{60}Co	4.5 ± 0.1 (-5)	1.07 ± 0.03(-4)	1.52 ± 0.03(-4)[b]	2.92 ± 0.07(-4)
^{65}Zn	<2(-5)	9.4 ± 0.5 (-5)	a	1.21 ± 0.08(-4)
^{91}Sr	1.45 ± 0.02(-3)	9.3 ± 0.2 (-3)	1.07 ± 0.02(-2)[b]	2.40 ± 0.02(-2)
^{91m}Y	*	*	*	7 ± 2 (-4)
^{93}Y	<2(-4)	2.0 ± 0.4 (-3)	2.0 ± 0.4 (-3)	<2(-3)
^{95}Zr	*	*	*	*
^{95}Nb	*	*	*	*
^{99}Mo	3.2 ± 0.9 (-5)	1.24 ± 0.03(-2)	1.24 ± 0.03(-2)[b]	1.08 ± 0.02(-2)
^{103}Ru	*	*	*	*
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	*	*	*	*

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0430

Nuclide	Filter	Filtrate	Sum	Grab
^{139}Ba	*	<2(-2)	a	3.2 ± 0.7 (-3)
^{140}Ba	5.4 ± 0.1 (-4)	1.84 ± 0.10(-2)	2.30 ± 0.04(-3)	2.63 ± 0.02(-2)
^{140}La	5.5 ± 0.1 (-4)	6 ± 1 (-4)	4.20 ± 0.05(-3)[b]	**
^{141}Ce	*	*	*	*
^{143}Ce	*	*	*	*
^{144}Ce	*	*	*	*
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	*	*	*	*
^{239}Np	2.93 ± 0.07(-4)	2.1 ± 0.3 (-2)	2.1 ± 0.3 (-2)[b]	2.44 ± 0.02(-2)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0850

Nuclide	Filter	Filtrate	Sum	Grab
^{84}Br	*	*	*	*
^{131}I	1.95 ± 0.01(-4)	5.78 ± 0.03(-2)	5.80 ± 0.03(-2)	5.75 ± 0.03(-2)
^{132}I	*	*	*	8.13 ± 0.04(-2)
^{133}I	1.90 ± 0.08(-4)	5.71 ± 0.05(-2)	5.73 ± 0.05(-2)[b]	5.40 ± 0.03(-2)
^{134}I	*	*	*	3.1 ± 0.6 (-4)
^{135}I	*	*	*	2.73 ± 0.02(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	4.87 ± 0.05(-4)	4.30 ± 0.04(-3)	4.79 ± 0.04(-3)[b]	6.22 ± 0.06(-3)
^{136}Cs	1.38 ± 0.03(-4)	1.45 ± 0.01(-3)	1.46 ± 0.01(-3)[b]	1.94 ± 0.02(-3)
^{137}Cs	6.04 ± 0.08(-4)	5.84 ± 0.06(-3)	6.44 ± 0.06(-3)[b]	7.1 ± 0.1 (-3)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	3.4 ± 0.2 (-4)	1.37 ± 0.03(-2)	1.40 ± 0.03(-2)[b]	1.70 ± 0.04(-2)
^{51}Cr	2.43 ± 0.05(-4)	1.93 ± 0.01(-2)	1.95 ± 0.01(-2)	2.03 ± 0.03(-2)
^{54}Mn	5.23 ± 0.08(-5)	1.62 ± 0.02(-4)	2.14 ± 0.02(-4)[b]	2.80 ± 0.05(-4)
^{56}Mn	*	*	*	2.53 ± 0.05(-3)
^{59}Fe	5.0 ± 0.2 (-5)	2.4 ± 0.6 (-5)	7.4 ± 0.6 (-5)	6.4 ± 0.9 (-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0850

Nuclide	Filter	Filtrate	Sum	Grab
^{57}Co	*	*	*	*
^{58}Co	4.2 ± 0.1 (-5)	1.7 ± 0.1 (-4)	2.1 ± 0.1 (-4)[b]	2.9 ± 0.1 (-4)
^{60}Co	6.9 ± 0.1 (-5)	2.00 ± 0.08(-4)	2.69 ± 0.08(-4)[b]	4.18 ± 0.06(-4)
^{65}Zn	8 ± 1 (-6)	9.7 ± 0.5 (-5)	1.05 ± 0.05(-4)	8.9 ± 0.9 (-5)
^{91}Sr	1.1 ± 0.5 (-3)	1.1 ± 0.3 (-2)	1.2 ± 0.3 (-2)	1.69 ± 0.02(-2)
^{91m}Y	*	*	*	4.1 ± 0.8 (-4)
^{93}Y	2.1 ± 0.1 (-2)	1.6 ± 0.1 (-1)	1.8 ± 0.1 (-1)[b]	<3(-3)
^{95}Zr	*	*	*	*
^{95}Nb	*	*	*	*
^{99}Mo	2.6 ± 0.6 (-5)	6 ± 2 (-3)	6 ± 2 (-3)[b]	1.10 ± 0.02(-2)
^{103}Ru	5.3 ± 0.6 (-6)	<2(-5)	a	<2(-5)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	<5(-6)	<2(-4)	a	<3(-4)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0850

Nuclide	Filter	Filtrate	Sum	Grab
^{139}Ba	*	*	*	7 ± 1 (-4)
^{140}Ba	2.81 ± 0.06(-4)	2.02 ± 0.06(-2)	2.30 ± 0.06(-3)[b]	3.2 ± 0.3 (-2)
^{140}La	5.39 ± 0.04(-3)	**	a, *	2.4 ± 0.3 (-4)
^{141}Ce	*	*	*	*
^{143}Ce	*	*	*	*
^{144}Ce	*	*	*	*
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	<5(-5)	<4(-4)	a	1.8 ± 0.2 (-3)
^{239}Np	6.8 ± 0.1 (-4)	2.4 ± 0.3 (-2)	2.4 ± 0.3 (-2)[b]	4.18 ± 0.04(-2)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1152

Nuclide	Filter	Filtrate	Sum	Grab
^{84}Br	*	*	*	*
^{131}I	1.90 ± 0.02(-4)	6.31 ± 0.02(-2)	6.33 ± 0.02(-2)[b]	6.03 ± 0.02(-2)
^{132}I	2.3 ± 0.1 (-4)	7.03 ± 0.08(-2)	7.05 ± 0.08(-2)[b]	7.40 ± 0.04(-2)
^{133}I	1.53 ± 0.04(-4)	5.12 ± 0.04(-2)	5.14 ± 0.04(-2)	5.20 ± 0.02(-2)
^{134}I	<1(-3)	<7(-3)	a	1.8 ± 0.8 (-4)
^{135}I	5.8 ± 0.7 (-5)	1.83 ± 0.02(-2)	1.84 ± 0.02(-2)	1.93 ± 0.02(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	4.34 ± 0.05(-4)	4.60 ± 0.03(-3)	5.03 ± 0.03(-3)[b]	5.99 ± 0.03(-3)
^{136}Cs	1.25 ± 0.03(-4)	1.50 ± 0.02(-3)	1.63 ± 0.02(-3)[b]	1.88 ± 0.03(-3)
^{137}Cs	5.24 ± 0.08(-4)	6.10 ± 0.07(-3)	6.62 ± 0.07(-3)[b]	7.84 ± 0.05(-3)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	1.62 ± 0.05(-4)	8.98 ± 0.07(-3)	9.14 ± 0.07(-3)[b]	1.11 ± 0.02(-2)
^{51}Cr	3.3 ± 0.1 (-4)	5.59 ± 0.09(-3)	5.92 ± 0.09(-3)	5.86 ± 0.09(-3)
^{54}Mn	1.45 ± 0.06(-4)	2.93 ± 0.04(-4)	4.38 ± 0.07(-4)[b]	7.02 ± 0.05(-4)
^{56}Mn	2.6 ± 0.2 (-4)	1.11 ± 0.06(-3)	1.37 ± 0.06(-3)[b]	2.75 ± 0.05(-3)
^{59}Fe	1.18 ± 0.06(-4)	9.8 ± 0.6 (-5)	2.16 ± 0.09(-4)	1.8 ± 0.1 (-4)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1152

Nuclide	Filter	Filtrate	Sum	Grab
^{57}Co	*	*	*	*
^{58}Co	6 ± 2 (-5)	2.3 ± 0.1 (-4)	2.9 ± 0.2 (-4)[b]	5.5 ± 0.8 (-4)
^{60}Co	1.65 ± 0.03(-4)	3.45 ± 0.06(-4)	5.10 ± 0.07(-4)[b]	8.2 ± 0.2 (-4)
^{65}Zn	1.2 ± 0.3 (-5)	6.3 ± 0.4 (-5)	7.5 ± 0.5 (-5)[b]	8.93 ± 0.06(-5)
^{91}Sr	7.8 ± 0.2 (-4)	4.1 ± 0.1 (-3)	4.9 ± 0.1 (-3)[b]	1.20 ± 0.02(-2)
^{91m}Y	*	*	*	*
^{93}Y	<1(-4)	1.6 ± 0.5 (-3)	1.6 ± 0.5 (-3)	<1(-3)
^{95}Zr	*	*	*	*
^{95}Nb	5 ± 2 (-6)	<2(-5)	a	<2(-5)
^{99}Mo	<6(-5)	5 ± 1 (-3)	5 ± 1 (-3)	7 ± 2 (-3)
^{103}Ru	1.8 ± 0.2 (-5)	<2(-5)	a	1.6 ± 0.3 (-5)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	<6(-6)	7 ± 2 (-4)	7 ± 2 (-4)[b]	<4(-4)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1152

Nuclide	Filter	Filtrate	Sum	Grab
^{139}Ba	*	*	*	*
^{140}Ba	5.06 ± 0.03(-3)	2.0 ± 0.1 (-2)	2.5 ± 0.1 (-3)	2.9 ± 0.4 (-2)
^{140}La	**	**	*	3.4 ± 0.3 (-4)
^{141}Ce	5 ± 1 (-6)	<2(-5)	a	<2(-5)
^{143}Ce	*	*	*	*
^{144}Ce	1.2 ± 0.2 (-4)	<7(-5)	a	<2(-4)
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	3.3 ± 0.6 (-5)	<3(-4)	a	<6(-4)
^{239}Np	5.75 ± 0.05(-4)	3.5 ± 0.3 (-2)	3.6 ± 0.3 (-2)	3.4 ± 0.5 (-2)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1532

Nuclide	Filter	Filtrate	Sum	Grab
^{84}Br	*	*	*	*
^{131}I	1.85 ± 0.02(-4)	5.76 ± 0.02(-2)	5.78 ± 0.02(-2)[b]	5.46 ± 0.03(-2)
^{132}I	*	*	*	*
^{133}I	1.9 ± 0.2 (-4)	3.97 ± 0.05(-2)	3.99 ± 0.05(-2)	4.01 ± 0.05(-2)
^{134}I	*	*	*	*
^{135}I	*	*	*	*
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	5.37 ± 0.06(-4)	4.58 ± 0.03(-3)	5.12 ± 0.03(-3)[b]	5.83 ± 0.04(-3)
^{136}Cs	1.58 ± 0.04(-4)	1.50 ± 0.02(-3)	1.66 ± 0.02(-3)[b]	1.96 ± 0.02(-3)
^{137}Cs	6.3 ± 0.1 (-4)	5.92 ± 0.05(-3)	6.55 ± 0.05(-3)[b]	7.55 ± 0.05(-3)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	1.4 ± 0.3 (-4)	5.7 ± 0.2 (-3)	5.8 ± 0.2 (-3)[b]	7.2 ± 0.3 (-3)
^{51}Cr	9.1 ± 0.2 (-4)	2.22 ± 0.03(-3)	3.13 ± 0.04(-3)[b]	2.7 ± 0.1 (-3)
^{54}Mn	4.52 ± 0.08(-4)	6.34 ± 0.05(-4)	1.09 ± 0.01(-3)[b]	1.57 ± 0.02(-3)
^{56}Mn	*	*	*	*
^{59}Fe	3.89 ± 0.05(-4)	1.49 ± 0.04(-4)	5.38 ± 0.06(-4)[b]	3.98 ± 0.07(-4)
^{57}Co	*	*	*	*

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 4-24-82 Time: 1532			
Nuclide	Filter	Filtrate	Sum	Grab
^{58}Co	1.91 ± 0.05(-4)	4.27 ± 0.09(-4)	6.2 ± 0.1 (-4)[b]	1.14 ± 0.04(-3)
^{60}Co	4.40 ± 0.06(-4)	6.76 ± 0.09(-4)	1.12 ± 0.01(-3)[b]	1.83 ± 0.03(-3)
^{65}Zn	2.7 ± 0.4 (-5)	8.4 ± 0.7 (-5)	1.11 ± 0.08(-4)[b]	1.48 ± 0.06(-4)
^{91}Sr	<2(-3)	<9(-3)	a	1.1 ± 0.4 (-2)
^{91m}Y	*	*	*	*
^{93}Y	2.1 ± 0.1 (-2)	9 ± 1 (-2)	1.1 ± 0.1 (-1)[b]	1.6 ± 0.1 (-1)
^{95}Zr	1.7 ± 0.2 (-5)	1.7 ± 0.8 (-5)	3.4 ± 0.8 (-5)	<2(-5)
^{95}Nb	2.1 ± 0.1 (-5)	1.2 ± 0.2 (-5)	3.4 ± 0.3 (-5)[b]	2.6 ± 0.3 (-5)
^{99}Mo	<7(-5)	5.0 ± 0.1 (-3)	5.0 ± 0.2 (-3)	5.5 ± 0.1 (-3)
^{103}Ru	4.7 ± 0.2 (-5)	1.1 ± 0.4 (-5)	5.7 ± 0.5 (-5)[b]	3.9 ± 0.4 (-5)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	1.3 ± 0.4 (-5)	<3(-4)	a	<2(-4)
^{139}Ba	*	*	*	*

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1532

Nuclide	Filter	Filtrate	Sum	Grab
^{140}Ba	4.75 ± 0.08(-3)	1.28 ± 0.04(-2)	1.76 ± 0.04(-2)b	2.43 ± 0.05(-2)
^{140}La	**	**	*	**
^{141}Ce	2.1 ± 0.2 (-5)	<2(-5)	a	<2(-5)
^{143}Ce	*	*	*	*
^{144}Ce	*	*	*	*
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	*	*	*	*
^{239}Np	7.2 ± 0.2 (-4)	4.2 ± 0.3 (-2)	4.3 ± 0.3 (-2)	4.0 ± 0.5 (-2)

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-27-82 Time: 0930			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<3(-5)
^{131}I	<2(-7)	<6(-7)	a	<2(-6)
^{132}I	<2(-5)	<3(-4)	a	<3(-6)
^{133}I	<3(-7)	<8(-7)	a	<2(-6)
^{134}I	*	*	*	<9(-6)
^{135}I	<2(-6)	<6(-6)	a	<4(-6)
^{88}Rb	*	*	*	<5(-5)
^{89}Rb	*	*	*	<3(-4)
^{134}Cs	2.3 ± 0.6 (-7)	5 ± 2 (-7)	7 ± 2 (-7)[b]	7.0 ± 0.6 (-6)
^{136}Cs	<1(-7)	<5(-7)	a	<3(-6)
^{137}Cs	3 ± 1 (-7)	7.1 ± 0.6 (-6)	7.4 ± 0.6 (-6)	8 ± 2 (-6)
^{138}Cs	*	*	*	<4(-6)
^{139}Cs	*	*	*	<3(-3)
^{24}Na	<3(-8)	<2(-7)	a	<2(-7)
^{51}Cr	5.3 ± 0.2 (-6)	<3(-6)	a	<2(-5)
^{54}Mn	1.66 ± 0.03(-6)	2.22 ± 0.04(-4)	2.24 ± 0.04(-4)[b]	4.02 ± 0.07(-4)
^{56}Mn	<3(-5)	<6(-5)	a	<3(-6)
^{59}Fe	1.09 ± 0.01(-5)	<5(-7)	a	9 ± 1 (-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-27-82
Time: 0930

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	1.5 ± 0.2 (-7)	<2(-7)	a	<2(-6)
^{58}Co	1.05 ± 0.01(-5)	1.13 ± 0.02(-4)	1.24 ± 0.02(-4)[b]	1.50 ± 0.01(-4)
^{60}Co	2.62 ± 0.03(-4)	1.92 ± 0.03(-3)	2.18 ± 0.03(-3)[b]	2.55 ± 0.04(-3)
^{65}Zn	1.15 ± 0.04(-5)	5.0 ± 0.2 (-5)	6.2 ± 0.2 (-5)	7.3 ± 0.3 (-5)
^{91}Sr	<2(-6)	8 ± 2 (-6)	a	<7(-6)
^{91m}Y	*	*	*	<6(-6)
^{93}Y	<2(-6)	<2(-5)	a	<2(-5)
^{95}Zr	8.2 ± 0.8 (-7)	<7(-7)	a	<3(-6)
^{95}Nb	1.43 ± 0.05(-6)	<4(-7)	a	<2(-6)
^{99}Mo	<5(-7)	<6(-6)	a	<9(-6)
^{103}Ru	5.5 ± 0.4 (-7)	<4(-7)	a	<3(-6)
^{106}RuD	<2(-6)	*	a, *	<2(-5)
^{110m}Ag	<3(-7)	<4(-7)	a	<3(-6)
^{124}Sb	<2(-7)	<2(-7)	a	<2(-6)
^{125}Sb	5.9 ± 0.8 (-7)	<9(-7)	a	<6(-6)
^{129m}Te	<2(-6)	<5(-5)	a	<3(-5)
^{129}Te	*	*	a, *	<4(-5)
^{131m}Te	<6(-7)	<4(-6)	a	<6(-6)
^{131}Te	*	*	*	<5(-5)
^{132}Te	<6(-8)	<6(-7)	a	<8(-7)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-27-82 Time: 0930			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	a, *	<5(-6)
^{140}Ba	<4(-7)	<2(-6)	a	<7(-6)
^{140}La	<2(-7)	<2(-7)	a	<5(-7)
^{141}Ce	1.0 ± 0.2 (-7)	<6(-7)	a	<2(-6)
^{143}Ce	<2(-7)	2.0 ± 0.4 (-6)	2.1 ± 0.4 (-6)	<4(-6)
^{144}Ce	2.31 ± 0.09(-6)	<3(-6)	a	<7(-6)
^{152}Eu	<2(-7)	<5(-7)	a	<3(-6)
^{154}Eu	<3(-7)	<5(-7)	a	<3(-6)
^{155}Eu	<1(-7)	<8(-7)	a	<3(-6)
^{187}W	<6(-7)	<3(-6)	a	<6(-6)
^{239}Np	<2(-7)	<9(-7)	a	<2(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-28-82 Time: 1500			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<4(-7)	<2(-6)	a	<3(-6)
^{132}I	*	*	*	*
^{133}I	<6(-5)	<2(-5)	a	<6(-6)
^{134}I	*	*	*	*
^{135}I	*	*	*	<2(-4)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	1.6 ± 0.2 (-6)	1.13 ± 0.06(-5)	1.29 ± 0.06(-5)	1.4 ± 0.1 (-5)
^{136}Cs	<6(-7)	<2(-6)	a	<4(-6)
^{137}Cs	2.3 ± 0.2 (-6)	1.30 ± 0.06(-5)	1.53 ± 0.06(-5)	1.6 ± 0.2 (-5)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<3(-4)	<6(-6)	a	<2(-6)
^{51}Cr	<3(-6)	<6(-6)	a	<2(-5)
^{54}Mn	1.06 ± 0.04(-5)	1.22 ± 0.02(-4)	1.33 ± 0.02(-4)[b]	2.63 ± 0.03(-4)
^{56}Mn	*	*	*	<3(-3)
^{59}Fe	<2(-6)	<3(-6)	a	<5(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-28-82 Time: 1500			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<2(-7)	<8(-7)	a	<2(-6)
^{58}Co	4.5 ± 0.4 (-6)	4.8 ± 0.2 (-5)	5.3 ± 0.2 (-5)[b]	1.14 ± 0.02(-4)
^{60}Co	6.83 ± 0.09(-5)	8.9 ± 0.1 (-4)	9.6 ± 0.1 (-4)[b]	2.00 ± 0.03(-3)
^{65}Zn	4.9 ± 0.7 (-6)	4.8 ± 0.3 (-5)	5.3 ± 0.3 (-5)[b]	8.7 ± 0.7 (-5)
^{91}Sr	*	<2(-3)	a, *	<7(-5)
^{91m}Y	*	*	*	*
^{93}Y	*	<2(-3)	a, *	<2(-4)
^{95}Zr	<2(-6)	<3(-6)	a	<6(-6)
^{95}Nb	<5(-7)	<2(-6)	a	<3(-6)
^{99}Mo	<2(-5)	<2(-5)	a	<2(-5)
^{103}Ru	<4(-7)	<2(-6)	a	<3(-6)
^{106}RuD	<4(-6)	<9(-6)	a	<4(-5)
^{110m}Ag	<2(-6)	<3(-6)	a	<6(-6)
^{124}Sb	<9(-7)	<9(-7)	a	<3(-6)
^{125}Sb	<9(-7)	<2(-6)	a	<7(-6)
^{129m}Te	<5(-6)	<2(-5)	a	<4(-5)
^{129}Te	*	*	*	*
^{131m}Te	<6(-5)	<3(-5)	a	<2(-5)
^{131}Te	*	*	*	*
^{132}Te	<8(-7)	<2(-6)	a	<2(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-28-82 Time: 1500			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	<3(-6)	<5(-6)	a	<9(-6)
^{140}La	<6(-6)	<3(-6)	a	<2(-6)
^{141}Ce	<3(-7)	<2(-6)	a	<2(-6)
^{143}Ce	<2(-5)	<9(-6)	a	<9(-6)
^{144}Ce	<2(-6)	<3(-6)	a	<7(-6)
^{152}Eu	<7(-7)	<2(-6)	a	<5(-6)
^{154}Eu	<1(-6)	<4(-6)	a	<7(-6)
^{155}Eu	<8(-7)	<2(-6)	a	<4(-6)
^{187}W	<2(-4)	<3(-5)	a	<2(-5)
^{239}Np	<4(-6)	<4(-6)	a	<4(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 0940			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<2(-7)	<8(-7)	a	<3(-6)
^{132}I	*	*	*	<3(-5)
^{133}I	<8(-6)	<4(-6)	a	<5(-6)
^{134}I	*	*	*	<4(-4)
^{135}I	*	<7(-6)	a, *	<1(-5)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<2(-7)	1.49 ± 0.07(-5)	1.50 ± 0.07(-5)	1.3 ± 0.2 (-5)
^{136}Cs	<3(-7)	<1(-6)	a	<4(-6)
^{137}Cs	<3(-7)	1.8 ± 0.1 (-5)	1.8 ± 0.1 (-5)	1.6 ± 0.3 (-5)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<7(-6)	<3(-6)	a	<9(-7)
^{51}Cr	<2(-6)	<5(-6)	a	<2(-5)
^{54}Mn	2.18 ± 0.04(-5)	3.19 ± 0.03(-4)	3.40 ± 0.03(-4)[b]	2.31 ± 0.05(-4)
^{56}Mn	*	*	*	<2(-5)
^{59}Fe	1.2 ± 0.2 (-6)	<6(-7)	a	<9(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 0940			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	7 ± 3 (-8)	<3(-7)	a	<2(-6)
^{58}Co	1.72 ± 0.09(-6)	1.24 ± 0.02(-4)	1.26 ± 0.02(-4)[b]	8.7 ± 0.3 (-5)
^{60}Co	3.82 ± 0.09(-5)	2.35 ± 0.05(-3)	2.39 ± 0.05(-3)[b]	1.65 ± 0.01(-3)
^{65}Zn	1.6 ± 0.2 (-6)	9.0 ± 0.5 (-5)	9.2 ± 0.5 (-5)[b]	5.6 ± 0.5 (-5)
^{91}Sr	*	<3(-4)	a, *	<3(-5)
^{91m}Y	*	*	*	<7(-4)
^{93}Y	*	<3(-4)	a, *	<5(-5)
^{95}Zr	<5(-7)	<2(-6)	a	<6(-6)
^{95}Nb	1.7 ± 0.7 (-7)	<8(-7)	a	<4(-6)
^{99}Mo	<3(-6)	<7(-6)	a	<3(-5)
^{103}Ru	<3(-7)	<5(-7)	a	<3(-6)
^{106}RuD	<2(-6)	*	a, *	<4(-5)
^{110m}Ag	<4(-7)	<6(-7)	a	<6(-6)
^{124}Sb	<2(-7)	8.4 ± 1.8 (-7)	a	<3(-6)
^{125}Sb	<4(-7)	<2(-6)	a	<6(-6)
^{129m}Te	<3(-6)	<8(-6)	a	<4(-5)
^{129}Te	*	*	*	*
^{131m}Te	<1(-5)	<1(-5)	a	<3(-5)
^{131}Te	*	*	*	*
^{132}Te	<3(-7)	<5(-7)	a	<2(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 0940			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	<8(-5)
^{140}Ba	<6(-7)	<3(-6)	a	<2(-5)
^{140}La	<6(-7)	1.1 ± 0.2 (-6)	a	<4(-6)
^{141}Ce	<2(-7)	<4(-7)	a	<4(-6)
^{143}Ce	<2(-6)	<4(-6)	a	<5(-6)
^{144}Ce	<1(-6)	<2(-6)	a	<2(-5)
^{152}Eu	<4(-7)	<8(-7)	a	<5(-6)
^{154}Eu	<3(-7)	<1(-6)	a	<6(-6)
^{155}Eu	<4(-7)	<7(-7)	a	<4(-6)
^{187}W	<2(-5)	<2(-5)	a	<2(-5)
^{239}Np	<2(-6)	<2(-6)	a	<7(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 2010			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<8(-5)
^{131}I	<5(-7)	1.6 ± 0.5 (-6)	a	<8(-6)
^{132}I	*	*	*	1.0 ± 0.2 (-5)
^{133}I	<2(-5)	4 ± 1 (-5)	a	7 ± 3 (-5)
^{134}I	*	*	*	4.5 ± 0.1 (-4)
^{135}I	*	*	*	1.60 ± 0.09(-4)
^{88}Rb	*	*	*	<5(-5)
^{89}Rb	*	*	*	1.4 ± 0.2 (-4)
^{134}Cs	<2(-6)	5.8 ± 0.6 (-6)	a	<9(-6)
^{136}Cs	<6(-7)	<2(-6)	a	<8(-6)
^{137}Cs	2.4 ± 0.4 (-6)	8.3 ± 0.6 (-6)	1.06 ± 0.07(-5)	<2(-5)
^{138}Cs	*	*	*	2.1 ± 0.1 (-4)
^{139}Cs	*	*	*	<9(-4)
^{24}Na	<8(-6)	<3(-5)	a	8 ± 2 (-6)
^{51}Cr	9 ± 1 (-6)	5.5 ± 0.3 (-5)	6.4 ± 0.3 (-5)	4 ± 2 (-5)
^{54}Mn	3.08 ± 0.05(-4)	2.28 ± 0.04(-4)	5.36 ± 0.06(-4)[b]	5.60 ± 0.07(-4)
^{56}Mn	*	*	*	4.8 ± 0.2 (-4)
^{59}Fe	1.87 ± 0.07(-5)	1.5 ± 0.1 (-5)	3.4 ± 0.1 (-5)	<4(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 2010			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	4.4 ± 0.8 (-7)	<6(-7)	a	<4(-6)
^{58}Co	2.08 ± 0.06(-7)	3.60 ± 0.08(-5)	3.62 ± 0.08(-5)[b]	6.3 ± 0.5 (-5)
^{60}Co	4.56 ± 0.05(-4)	7.3 ± 0.1 (-4)	1.19 ± 0.01(-3)[b]	1.37 ± 0.01(-3)
^{65}Zn	1.6 ± 0.1 (-5)	2.3 ± 0.2 (-5)	3.9 ± 0.2 (-5)[b]	1.9 ± 0.6 (-5)
^{91}Sr	*	*	*	5.8 ± 0.8 (-5)
^{91m}Y	*	*	*	<7(-6)
^{93}Y	<4(-3)	<8(-3)	a, *	<5(-5)
^{95}Zr	<2(-6)	<3(-6)	a	<2(-5)
^{95}Nb	2.8 ± 0.4 (-6)	1.7 ± 0.7 (-6)	4.5 ± 0.8 (-6)	<2(-5)
^{99}Mo	<6(-6)	<2(-5)	a	<5(-5)
^{103}Ru	9 ± 3 (-7)	<2(-6)	a	<8(-6)
^{106}RuD	<6(-6)	<2(-5)	a	<7(-5)
^{110m}Ag	<2(-6)	<3(-6)	a	<2(-5)
^{124}Sb	<7(-7)	9 ± 4 (-7)	a	<2(-5)
^{125}Sb	<1(-6)	3 ± 1 (-6)	a	<3(-5)
^{129m}Te	<1(-5)	<2(-5)	a	<2(-4)
^{129}Te	*	*	*	<9(-5)
^{131m}Te	<2(-5)	<4(-5)	a	<4(-5)
^{131}Te	*	*	*	<9(-5)
^{132}Te	<9(-7)	<2(-6)	a	<5(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 2010			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	4.1 ± 0.1 (-4)
^{140}Ba	<3(-6)	<4(-6)	a	<2(-5)
^{140}La	<3(-6)	*	a, *	8 ± 3 (-6)
^{141}Ce	<7(-7)	7.3 ± 3.5 (-7)	a	<7(-6)
^{143}Ce	<4(-6)	<8(-6)	a	<8(-6)
^{144}Ce	4.6 ± 0.7 (-6)	4 ± 2 (-6)	9 ± 2 (-6)	<3(-5)
^{152}Eu	<2(-6)	<3(-6)	a	8.8 ± 0.6 (-5)
^{154}Eu	<2(-6)	<4(-6)	a	<2(-5)
^{155}Eu	<6(-7)	<2(-6)	a	<7(-6)
^{187}W	<3(-5)	<5(-5)	a	<3(-5)
^{239}Np	<2(-6)	6 ± 2 (-6)	a	<2(-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-30-82 Time: 0830			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	4.5 ± 0.5 (-4)
^{131}I	<2(-6)	2.63 ± 0.09(-5)	2.7 ± 0.1 (-5)[b]	1.02 ± 0.06(-4)
^{132}I	*	*	a, *	1.40 ± 0.09(-4)
^{133}I	<3(-6)	5.49 ± 0.08(-4)	5.50 ± 0.08(-4)[b]	8.0 ± 0.1 (-4)
^{134}I	*	*	*	3.81 ± 0.06(-3)
^{135}I	<7(-5)	1.75 ± 0.05(-3)	1.78 ± 0.06(-3)	1.68 ± 0.03(-3)
^{88}Rb	*	*	*	<2(-4)
^{89}Rb	*	*	*	1.7 ± 0.4 (-4)
^{134}Cs	<1(-6)	4.9 ± 0.8 (-6)	a	2.3 ± 0.7 (-5)
^{136}Cs	<8(-7)	<4(-6)	a	<2(-5)
^{137}Cs	<3(-6)	<7(-6)	a	<3(-5)
^{138}Cs	*	*	*	6.3 ± 0.2 (-4)
^{139}Cs	*	*	*	<4(-3)
^{24}Na	<1(-6)	6.6 ± 0.3 (-5)	6.6 ± 0.3 (-5)[b]	8.9 ± 0.7 (-5)
^{51}Cr	5.3 ± 0.2 (-5)	2.40 ± 0.09(-4)	2.93 ± 0.09(-4)[b]	9 ± 6 (-4)
^{54}Mn	6.8 ± 0.1 (-4)	6.53 ± 0.05(-4)	1.33 ± 0.01(-3)	1.45 ± 0.04(-3)
^{56}Mn	*	*	a, *	4.65 ± 0.08(-3)
^{59}Fe	5.7 ± 0.1 (-5)	5.3 ± 0.3 (-5)	1.10 ± 0.03(-4)	8 ± 2 (-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-30-82 Time: 0830			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	8 ± 1 (-7)	<2(-6)	a	<1(-5)
^{58}Co	5.64 ± 0.09(-5)	1.07 ± 0.02(-4)	1.63 ± 0.02(-4)[b]	3.0 ± 0.2 (-4)
^{60}Co	1.10 ± 0.01(-3)	1.57 ± 0.02(-3)	2.67 ± 0.02(-3)[b]	4.15 ± 0.05(-3)
^{65}Zn	4.2 ± 0.3 (-5)	6.6 ± 0.3 (-5)	1.08 ± 0.04(-4)[b]	1.6 ± 0.2 (-4)
^{91}Sr	<4(-5)	2.3 ± 0.3 (-4)	a	5.2 ± 0.2 (-4)
^{91m}Y	*	*	*	5 ± 1 (-5)
^{93}Y	<4(-5)	<2(-4)	a	<2(-4)
^{95}Zr	4.4 ± 0.7 (-6)	<7(-6)	a	<3(-5)
^{95}Nb	1.03 ± 0.05(-5)	<6(-6)	a	1.21 ± 0.07(-4)
^{99}Mo	<5(-6)	<4(-5)	a	7.3 ± 0.9 (-4)
^{103}Ru	4.3 ± 0.6 (-6)	<4(-6)	a	<3(-5)
^{106}RuD	<2(-5)	<3(-5)	a	<5(-4)
^{110m}Ag	<4(-6)	6 ± 1 (-6)	a	<6(-5)
^{124}Sb	<3(-6)	<3(-6)	a	<4(-5)
^{125}Sb	<3(-6)	<5(-6)	a	<2(-4)
^{129m}Te	<2(-5)	<4(-5)	a	<2(-4)
^{129}Te	*	*	*	<1(-3)
^{131m}Te	<7(-6)	<3(-5)	a	<9(-5)
^{131}Te	*	*	*	<2(-4)
^{132}Te	1.3 ± 0.3 (-6)	<3(-6)	a	<2(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 9-30-82 Time: 0830			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	1.88 ± 0.03(-3)
^{140}Ba	<4(-6)	<3(-5)	a	<4(-4)
^{140}La	<2(-6)	<4(-6)	a	3.4 ± 0.9 (-5)
^{141}Ce	<2(-6)	<3(-6)	a	<3(-5)
^{143}Ce	7 ± 1 (-6)	<5(-6)	a	<4(-5)
^{144}Ce	1.42 ± 0.08(-5)	1.9 ± 0.4 (-5)	3.3 ± 0.4 (-5)	<8(-5)
^{152}Eu	<2(-6)	<5(-6)	a	6.9 ± 0.2 (-4)
^{154}Eu	<2(-6)	<3(-6)	a	<4(-5)
^{155}Eu	<2(-6)	<5(-6)	a	<3(-5)
^{187}W	<1(-5)	<2(-5)	a	<7(-5)
^{239}Np	<2(-6)	1.64 ± 0.04(-4)	1.65 ± 0.04(-4)[b]	2.8 ± 0.4 (-4)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 1040			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<1(-6)	8.0 ± 0.3 (-5)	8.0 ± 0.3 (-5)	8.3 ± 0.4 (-5)
^{132}I	*	*	*	*
^{133}I	5 ± 2 (-6)	1.2 ± 0.1 (-3)	1.2 ± 0.1 (-3)	1.16 ± 0.02(-3)
^{134}I	*	*	*	*
^{135}I	<3(-4)	*	a, *	<7(-3)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<1(-6)	<2(-5)	a	<2(-5)
^{136}Cs	<2(-6)	<2(-5)	a	<2(-5)
^{137}Cs	1.2 ± 0.3 (-6)	1.4 ± 0.3 (-5)	1.5 ± 0.3 (-5)	1.8 ± 0.3 (-5)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	2.1 ± 0.6 (-6)	1.9 ± 0.5 (-4)	1.9 ± 0.5 (-4)	1.5 ± 0.1 (-4)
^{51}Cr	7.6 ± 0.5 (-5)	2.6 ± 0.1 (-4)	3.4 ± 0.1 (-4)	3.4 ± 0.2 (-4)
^{54}Mn	4.93 ± 0.09(-4)	3.36 ± 0.06(-3)	3.85 ± 0.06(-3)[b]	3.58 ± 0.06(-3)
^{56}Mn	*	*	*	*
^{59}Fe	5.4 ± 0.1 (-5)	1.76 ± 0.06(-4)	2.30 ± 0.06(-4)[b]	1.58 ± 0.06(-4)

Table 8.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 1040			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<2(-6)	<6(-5)	a	<8(-5)
^{58}Co	5.24 ± 0.09(-5)	1.38 ± 0.02(-3)	1.43 ± 0.02(-3)	1.53 ± 0.02(-3)
^{60}Co	6.99 ± 0.08(-4)	1.86 ± 0.02(-2)	1.93 ± 0.02(-2)[b]	2.04 ± 0.02(-2)
^{65}Zn	3.6 ± 0.1 (-5)	5.1 ± 0.2 (-4)	5.5 ± 0.2 (-4)	5.2 ± 0.2 (-4)
^{91}Sr	<8(-5)	*	a, *	2.2 ± 0.7 (-3)
^{91m}Y	*	*	*	*
^{93}Y	<7(-5)	<6(-2)	a	<3(-3)
^{95}Zr	4.4 ± 0.9 (-6)	<3(-5)	a	2.3 ± 0.6 (-5)
^{95}Nb	1.22 ± 0.05(-5)	2.9 ± 0.4 (-5)	4.1 ± 0.4 (-5)[b]	2.2 ± 0.4 (-5)
^{99}Mo	<2(-5)	<3(-4)	a	<2(-4)
^{103}Ru	5.5 ± 0.3 (-6)	1.1 ± 0.2 (-5)	1.7 ± 0.2 (-5)	1.1 ± 0.3 (-5)
^{106}RuD	<2(-5)	<9(-5)	a	<2(-4)
^{110m}Ag	1.8 ± 0.4 (-6)	7 ± 3 (-6)	9 ± 3 (-6)	1.2 ± 0.3 (-5)
^{124}Sb	<3(-6)	<2(-5)	a	<2(-5)
^{125}Sb	<4(-6)	<3(-5)	a	<3(-5)
^{129m}Te	<2(-5)	<7(-5)	a	<2(-4)
^{129}Te	*	*	*	*
^{131m}Te	<2(-5)	<3(-4)	a	<2(-4)
^{131}Te	*	*	*	*
^{132}Te	5 ± 2 (-7)	1.0 ± 0.4 (-5)	1.1 ± 0.4 (-5)[b]	<6(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-2-82
Time: 1040

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	3 ± 1 (-6)	6 ± 1 (-5)	6 ± 1 (-5)	7 ± 1 (-5)
^{140}La	<4(-6)	*	a, *	<3(-5)
^{141}Ce	1.5 ± 0.3 (-6)	<5(-6)	a	5 ± 2 (-6)
^{143}Ce	<3(-6)	<7(-5)	a	<3(-5)
^{144}Ce	1.43 ± 0.08(-5)	<3(-5)	a	4 ± 1 (-5)
^{152}Eu	<2(-6)	<2(-5)	a	<2(-5)
^{154}Eu	<2(-6)	<2(-5)	a	<3(-5)
^{155}Eu	<3(-6)	<2(-5)	a	<3(-5)
^{187}W	<2(-5)	<4(-4)	a	<2(-4)
^{239}Np	1.21 ± 0.07(-5)	1.02 ± 0.02(-3)	1.03 ± 0.02(-3)[b]	1.22 ± 0.01(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table 8.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 1240			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	7 ± 2 (-7)	8.8 ± 0.2 (-5)	8.9 ± 0.2 (-5)	9.3 ± 0.2 (-5)
^{132}I	*	*	*	*
^{133}I	8.8 ± 0.8 (-6)	1.41 ± 0.02(-3)	1.42 ± 0.02(-3)	1.36 ± 0.03(-3)
^{134}I	*	*	*	*
^{135}I	<2(-4)	<6(-3)	a	<7(-3)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<7(-7)	<2(-5)	a	8 ± 2 (-6)
^{136}Cs	<7(-7)	<6(-6)	a	<1(-5)
^{137}Cs	8 ± 2 (-7)	1.0 ± 0.3 (-5)	1.1 ± 0.3 (-5)	1.1 ± 0.2 (-5)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<2(-6)	1.8 ± 0.1 (-4)	1.8 ± 0.1 (-4)[b]	2.12 ± 0.09(-4)
^{51}Cr	4.7 ± 0.3(-5)	2.7 ± 0.2 (-4)	3.2 ± 0.2 (-4)	3 ± 1 (-4)
^{54}Mn	1.96 ± 0.03(-4)	1.47 ± 0.03(-3)[b]	1.67 ± 0.03(-3)[b]	2.10 ± 0.03(-3)
^{56}Mn	*	*	*	*
^{59}Fe	2.14 ± 0.06(-5)	7.5 ± 0.4 (-5)	9.6 ± 0.4 (-5)	1.04 ± 0.05(-4)

Table 8.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 1240			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	3.5 ± 0.8 (-7)	6.3 ± 0.8 (-6)	6.7 ± 0.8 (-6)	<9(-6)
^{58}Co	2.42 ± 0.08(-5)	7.1 ± 0.1 (-4)	7.3 ± 0.1 (-4)[b]	8.2 ± 0.1 (-4)
^{60}Co	3.24 ± 0.04(-4)	9.5 ± 0.1 (-3)	9.8 ± 0.1 (-3)[b]	1.09 ± 0.01(-2)
^{65}Zn	1.68 ± 0.09(-5)	2.39 ± 0.09(-4)	2.56 ± 0.09(-4)[b]	3.06 ± 0.09(-4)
^{91}Sr	<5(-5)	<2(-3)	a	<1(-3)
^{91m}Y	*	*	*	*
^{93}Y	<5(-5)	<2(-3)	a	<1(-3)
^{95}Zr	2.8 ± 0.5 (-6)	<2(-5)	a	<2(-5)
^{95}Nb	5.8 ± 0.4 (-6)	9 ± 3 (-6)	1.5 ± 0.3 (-5)	1.8 ± 0.3 (-5)
^{99}Mo	<6(-6)	1.8 ± 0.2 (-4)	1.8 ± 0.2 (-4)	1.2 ± 0.2 (-4)
^{103}Ru	2.3 ± 0.2 (-6)	<6(-6)	a	1.0 ± 0.2 (-5)
^{106}RuD	<9(-6)	<7(-5)	a	<5(-5)
^{110m}Ag	3.0 ± 0.3 (-6)	1.0 ± 0.3 (-5)	1.3 ± 0.3 (-5)	1.3 ± 0.2 (-5)
^{124}Sb	<2(-6)	<7(-6)	a	<6(-6)
^{125}Sb	<2(-6)	<2(-5)	a	<2(-5)
^{129m}Te	<6(-6)	<7(-5)	a	<2(-4)
^{129}Te	*	*	*	*
^{131m}Te	<6(-6)	<2(-4)	a	<9(-5)
^{131}Te	*	*	*	*
^{132}Te	5 ± 2 (-7)	<2(-5)	a	<6(-6)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 1240			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	<5(-6)	3.9 ± 0.8 (-5)	a	8.5 ± 0.7 (-5)
^{140}La	4.1 ± 0.4 (-6)	<2(-5)	a	*
^{141}Ce	7 ± 2 (-7)	<6(-6)	a	5 ± 1 (-6)
^{143}Ce	<3(-6)	<2(-5)	a	<3(-5)
^{144}Ce	6.4 ± 0.7 (-6)	3.3 ± 0.7 (-5)	3.9 ± 0.7 (-5)[b]	2.1 ± 0.7 (-5)
^{152}Eu	<9(-7)	<1(-5)	a	<9(-6)
^{154}Eu	<2(-6)	<8(-6)	a	<1(-5)
^{155}Eu	<2(-6)	<2(-5)	a	<2(-5)
^{187}W	<8(-6)	<9(-5)	a	<1(-4)
^{239}Np	8.9 ± 0.4 (-6)	1.23 ± 0.02(-3)	1.24 ± 0.02(-3)	1.32 ± 0.01(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 2030			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	7 ± 2 (-7)	2.35 ± 0.06(-4)	2.36 ± 0.06(-4)	2.21 ± 0.04(-4)
^{132}I	*	*	*	*
^{133}I	1.3 ± 0.1 (-5)	4.7 ± 0.1 (-3)	4.7 ± 0.1 (-3)	4.40 ± 0.06(-3)
^{134}I	*	*	*	*
^{135}I	<1(-4)	*	a, *	*
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<7(-7)	6 ± 2 (-6)	a	6 ± 2 (-6)
^{136}Cs	<9(-7)	<5(-6)	a	<4(-6)
^{137}Cs	1.0 ± 0.2 (-6)	1.2 ± 0.2 (-5)	1.3 ± 0.2 (-5)	9 ± 2 (-6)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	7 ± 2 (-6)	5.7 ± 0.4 (-4)	5.8 ± 0.4 (-4)	5.5 ± 0.5 (-4)
^{51}Cr	1.9 ± 0.2 (-5)	5.0 ± 0.1 (-4)	5.2 ± 0.1 (-4)[b]	4.4 ± 0.1 (-4)
^{54}Mn	3.2 ± 0.1 (-5)	5.16 ± 0.08(-4)	5.48 ± 0.08(-4)[b]	4.6 ± 0.1 (-4)
^{56}Mn	*	*	*	*
^{59}Fe	3.1 ± 0.4 (-6)	1.7 ± 0.2 (-5)	2.0 ± 0.2 (-5)	1.2 ± 0.2 (-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 2030			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<2(-7)	<6(-6)	a	<7(-6)
^{58}Co	4.0 ± 0.6 (-6)	1.94 ± 0.08(-4)	1.98 ± 0.08(-4)	1.87 ± 0.07(-4)
^{60}Co	5.8 ± 0.1 (-5)	2.21 ± 0.03(-3)	2.3 ± 0.3 (-3)	2.10 ± 0.02(-3)
^{65}Zn	2.5 ± 0.7 (-6)	1.42 ± 0.05(-4)	1.45 ± 0.05(-4)	1.46 ± 0.05(-4)
^{91}Sr	<8(-5)	<9(-3)	a	<8(-3)
^{91m}Y	*	*	*	*
^{93}Y	<1(-4)	<2(-2)	a	<2(-2)
^{95}Zr	<9(-7)	<6(-6)	a	<7(-6)
^{95}Nb	<1(-6)	<6(-6)	a	<6(-6)
^{99}Mo	<5(-6)	4.3 ± 0.2 (-4)	4.3 ± 0.2 (-4)	4.1 ± 0.2 (-4)
^{103}Ru	<7(-7)	<4(-6)	a	<3(-6)
^{106}RuD	<4(-6)	<5(-5)	a	<3(-5)
^{110m}Ag	3.6 ± 0.3 (-6)	5.2 ± 0.3 (-5)	5.6 ± 0.3 (-5)[b]	4.1 ± 0.2 (-5)
^{124}Sb	<2(-6)	<4(-6)	a	<3(-6)
^{125}Sb	<1(-6)	<6(-6)	a	<8(-6)
^{129m}Te	<2(-5)	<4(-5)	a	<3(-5)
^{129}Te	*	*	*	*
^{131m}Te	<6(-6)	<2(-4)	a	<2(-4)
^{131}Te	*	*	*	*
^{132}Te	<4(-7)	<2(-5)	a	<2(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-2-82 Time: 2030			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	8.4 ± 0.9 (-6)	1.14 ± 0.07(-4)	1.22 ± 0.07(-4)[b]	2.23 ± 0.06(-4)
^{140}La	<3(-6)	<6(-5)	a	*
^{141}Ce	1.2 ± 0.2 (-6)	1.4 ± 0.1 (-5)	1.5 ± 0.1 (-5)	1.2 ± 0.2 (-5)
^{143}Ce	<2(-6)	<2(-5)	a	<3(-5)
^{144}Ce	<3(-6)	<9(-6)	a	<2(-5)
^{152}Eu	<8(-7)	<6(-6)	a	<7(-6)
^{154}Eu	<2(-6)	<5(-6)	a	<5(-6)
^{155}Eu	<3(-6)	<3(-5)	a	<7(-6)
^{187}W	<2(-5)	<2(-4)	a	<2(-4)
^{239}Np	1.48 ± 0.06(-5)	1.84 ± 0.03(-3)	1.85 ± 0.03(-3)[b]	1.07 ± 0.03(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-6-82 Time: 1617			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	3.3 ± 0.2 (-6)	8.2 ± 0.1 (-4)	8.2 ± 0.1 (-4)	8.3 ± 0.3 (-4)
^{132}I	*	*	*	1.7 ± 0.1 (-2)
^{133}I	5.0 ± 0.1 (-5)	1.38 ± 0.01(-2)	1.38 ± 0.01(-2)	1.37 ± 0.01(-2)
^{134}I	*	*	*	*
^{135}I	1.4 ± 0.1 (-4)	2.95 ± 0.03(-2)	2.96 ± 0.03(-2)	3.06 ± 0.02(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<7(-7)	<3(-6)	a	<8(-6)
^{136}Cs	<2(-6)	1.11 ± 0.09(-5)	a	2.2 ± 0.5 (-5)
^{137}Cs	1.0 ± 0.2 (-6)	4.6 ± 0.9 (-6)	5.6 ± 0.9 (-6)	<3(-5)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	2.9 ± 0.1 (-5)	2.97 ± 0.05(-3)	3.00 ± 0.05(-3)[b]	3.27 ± 0.05(-3)
^{51}Cr	8.6 ± 0.1 (-5)	1.99 ± 0.03(-3)	2.08 ± 0.03(-3)	2.08 ± 0.05(-3)
^{54}Mn	1.80 ± 0.03(-4)	8.9 ± 0.7 (-5)	2.69 ± 0.08(-4)[b]	5.4 ± 0.4 (-4)
^{56}Mn	*	*	*	<5(-3)
^{59}Fe	2.71 ± 0.06(-5)	<3(-6)	a	5 ± 1 (-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-6-82
Time: 1617

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<8(-7)	<2(-5)	a	<3(-5)
^{58}Co	1.87 ± 0.05(-5)	4.5 ± 0.4 (-5)	6.4 ± 0.4 (-5)[b]	4.6 ± 0.5 (-5)
^{60}Co	2.12 ± 0.02(-4)	3.26 ± 0.03(-4)	5.38 ± 0.04(-4)	5.14 ± 0.09(-4)
^{65}Zn	1.2 ± 0.1 (-5)	5.6 ± 0.3 (-5)	6.8 ± 0.3 (-5)	9 ± 1 (-5)
^{91}Sr	1.14 ± 0.05(-4)	2.48 ± 0.07(-3)	2.60 ± 0.07(-3)[b]	7.38 ± 0.08(-3)
^{91m}Y	*	*	*	*
^{93}Y	<4(-5)	1.7 ± 0.2 (-3)	1.7 ± 0.2 (-3)[b]	7 ± 2 (-4)
^{95}Zr	1.5 ± 0.3 (-6)	<5(-6)	a	<2(-5)
^{95}Nb	3.8 ± 0.3 (-6)	<9(-6)	a	<9(-6)
^{99}Mo	8 ± 1 (-6)	2.67 ± 0.04(-3)	2.68 ± 0.04(-3)	2.54 ± 0.07(-3)
^{103}Ru	1.9 ± 0.2 (-6)	<3(-6)	a	<1(-5)
^{106}RuD	<9(-6)	<3(-5)	a	<1(-4)
^{110m}Ag	2.4 ± 0.2 (-6)	1.14 ± 0.09(-5)	1.38 ± 0.09(-5)	1.5 ± 0.3 (-5)
^{124}Sb	<9(-7)	<2(-6)	a	<2(-5)
^{125}Sb	<9(-7)	<3(-6)	a	<3(-5)
^{129m}Te	<4(-6)	<2(-5)	a	<2(-4)
^{129}Te	*	*	*	*
^{131m}Te	<4(-6)	<2(-5)	a	<5(-5)
^{131}Te	*	*	*	*
^{132}Te	1.1 ± 0.2 (-6)	<4(-5)	a	<3(-5)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-6-82 Time: 1617			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	2.55 ± 0.09(-5)	2.40 ± 0.09(-4)	2.7 ± 0.1 (-4)[b]	5.3 ± 0.1 (-4)
^{140}La	3.3 ± 0.7 (-6)	1.3 ± 0.3 (-4)	1.3 ± 0.3 (-4)[b]	<6(-6)
^{141}Ce	2.1 ± 0.2 (-6)	1.9 ± 0.3 (-5)	2.1 ± 0.3 (-5)	<2(-5)
^{143}Ce	5.2 ± 0.3 (-6)	<7(-6)	a	<4(-5)
^{144}Ce	1.47 ± 0.06(-5)	<2(-5)	a	<2(-4)
^{152}Eu	<6(-7)	<6(-6)	a	<3(-5)
^{154}Eu	<2(-6)	<4(-6)	a	<2(-5)
^{155}Eu	<2(-6)	<2(-5)	a	<4(-5)
^{187}W	3.2 ± 0.2 (-5)	3.0 ± 0.7 (-5)	6.2 ± 0.7 (-5)	<9(-5)
^{239}Np	5.96 ± 0.05(-5)	4.46 ± 0.02(-3)	4.52 ± 0.02(-3)[b]	5.33 ± 0.04(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-24-82 Time: 1340			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<7(-5)	*	a, *	6.5 ± 0.8 (-3)
^{131}I	8.1 ± 0.4 (-6)	1.63 ± 0.03(-3)	1.64 ± 0.03(-3)[b]	2.0 ± 0.1 (-3)
^{132}I	1.24 ± 0.01(-4)	3.45 ± 0.01(-2)	3.46 ± 0.01(-2)[b]	4.15 ± 0.03(-2)
^{133}I	8.05 ± 0.04 (-5)	1.74 ± 0.01(-2)	1.75 ± 0.01(-2)[b]	1.89 ± 0.01(-2)
^{134}I	1.56 ± 0.04(-4)	3.31 ± 0.04(-2)	3.33 ± 0.04(-2)[b]	4.66 ± 0.05(-2)
^{135}I	1.33 ± 0.04(-2)	2.87 ± 0.01(-2)	2.87 ± 0.01(-2)[b]	3.29 ± 0.03(-2)
^{88}Rb	<3(-3)	*	a, *	<8(-3)
^{89}Rb	*	*	*	<2(-2)
^{134}Cs	<5(-7)	<6(-6)	a	<1(-4)
^{136}Cs	<8(-7)	<2(-5)	a	<2(-4)
^{137}Cs	<8(-7)	<2(-5)	a	<7(-4)
^{138}Cs	<2(-4)	*	a, *	4.6 ± 0.4 (-3)
^{139}Cs	*	*	*	*
^{24}Na	1.25 ± 0.01(-4)	2.60 ± 0.02(-2)	2.61 ± 0.02(-2)[b]	3.06 ± 0.04(-2)
^{51}Cr	7.6 ± 0.1 (-5)	5.38 ± 0.02(-3)	5.46 ± 0.02(-3)[b]	7.0 ± 0.4 (-3)
^{54}Mn	4.8 ± 0.1 (-5)	1.5 ± 0.1 (-4)	2.0 ± 0.1 (-4)[b]	4.2 ± 0.7 (-4)
^{56}Mn	4.68 ± 0.04(-4)	1.52 ± 0.08(-3)	1.99 ± 0.08(-3)[b]	5.0 ± 0.5 (-3)
^{59}Fe	1.58 ± 0.04(-5)	<9(-5)	a	<7(-4)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-24-82 Time: 1340			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<2(-6)	<3(-4)	a	<3(-4)
^{58}Co	1.21 ± 0.04(-5)	3.4 ± 0.2 (-5)	4.6 ± 0.2 (-5)	<9(-4)
^{60}Co	5.50 ± 0.04(-5)	8.1 ± 0.3 (-5)	1.36 ± 0.03(-4)[b]	6.0 ± 0.6 (-4)
^{65}Zn	6.8 ± 0.6 (-6)	<3(-5)	a	<2(-3)
^{91}Sr	8.5 ± 0.1 (-5)	1.30 ± 0.01(-2)	1.31 ± 0.01(-2)[b]	1.81 ± 0.03(-2)
^{91m}Y	<9(-4)	<2(-2)	a, *	<2(-3)
^{93}Y	2.4 ± 0.2 (-5)	<5(-4)	a	<3(-3)
^{95}Zr	<2(-6)	<9(-6)	a	<2(-4)
^{95}Nb	<2(-6)	<7(-6)	a	<2(-3)
^{99}Mo	3.0 ± 0.1 (-5)	9.47 ± 0.05(-3)	9.50 ± 0.05(-3)[b]	1.21 ± 0.03(-2)
^{103}Ru	<2(-6)	<5(-6)	a	<1(-4)
^{106}RuD	<9(-6)	<6(-5)	a	4 ± 1 (-3)
^{110m}Ag	<5(-6)	<6(-6)	a	<3(-4)
^{124}Sb	<2(-6)	<1(-5)	a	<2(-4)
^{125}Sb	<3(-6)	<2(-5)	a	<2(-3)
^{129m}Te	<6(-6)	<5(-5)	a	<2(-3)
^{129}Te	<4(-5)	<6(-3)	a	<8(-3)
^{131m}Te	<6(-6)	<8(-5)	a	<2(-3)
^{131}Te	<4(-4)	*	a, *	<1(-2)
^{132}Te	1.2 ± 0.2 (-6)	<6(-5)	a	<2(-4)

Table B.3-12 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-24-82 Time: 1340			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	1.77 ± 0.03(-4)	8.5 ± 0.1 (-3)	8.7 ± 0.1 (-3)[b]	1.66 ± 0.04(-2)
^{140}Ba	5.33 ± 0.08(-5)	2.9 ± 0.1 (-3)	4.0 ± 0.1 (-4)[b]	6.0 ± 0.3 (-3)
^{140}La	6.2 ± 0.3 (-6)	**	2.57 ± 0.05(-4)[b]	9 ± 4 (-5)
^{141}Ce	<2(-6)	<2(-5)	a	<3(-4)
^{143}Ce	<3(-6)	<3(-5)	a	<3(-4)
^{144}Ce	1.8 ± 0.1 (-5)	<5(-5)	a	<2(-2)
^{152}Eu	<2(-6)	<2(-5)	a	<6(-4)
^{154}Eu	<2(-6)	<2(-5)	a	<5(-4)
^{155}Eu	<2(-6)	<4(-4)	a	<4(-3)
^{187}W	1.69 ± 0.09(-5)	<7(-5)	a	<8(-4)
^{239}Np	9.42 ± 0.09(-5)	1.40 ± 0.01(-2)	1.41 ± 0.01(-2)[b]	1.75 ± 0.01(-2)

* Radionuclide not measured.

** Parent-daughter corrected value ≤ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab data do not agree.

Table B.3-13
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

Nuclide	Date and Time					
	3-15-82 0932	3-17-82 0810	3-22-82 1604	4-8-82 1520	4-20-82 1110	4-23-82 1614
Cl-38	4.7 ± 0.4 (-3)	5.7 ± 0.6 (-3)	1.11 ± 0.05(-2)	<3(-3)	<5(-3)	2.6 ± 0.8 (-3)
Ni-65	<6(-4)	<8(-4)	<7(-4)	<2(-3)	<9(-4)	<9(-4)
Sr-92	1.97 ± 0.03(-2)	2.13 ± 0.06(-2)	2.14 ± 0.05(-2)	1.91 ± 0.03(-2)	2.12 ± 0.04(-2)	2.12 ± 0.06(-2)
Y-92	4.5 ± 0.5 (-3)	4 ± 1 (-3)	3.7 ± 0.9 (-3)	<5(-3)	<1(-2)	<1(-2)
Nb-95m	4.5 ± 0.2 (-3)	7.8 ± 0.4 (-3)	6.4 ± 0.5 (-3)	7.0 ± 0.2 (-3)	5.5 ± 0.3 (-3)	6.2 ± 0.2 (-3)
Tc-99m	7.5 ± 0.1 (-2)	8.3 ± 0.1 (-2)	8.0 ± 0.1 (-2)	9.03 ± 0.09(-2)	9.6 ± 0.1 (-2)	9.91 ± 0.08(-2)
Tc-101	1.59 ± 0.01(-1)	1.39 ± 0.03(-1)	1.21 ± 0.01(-1)	2.37 ± 0.03(-1)	2.40 ± 0.05(-1)	2.17 ± 0.05(-1)
Tc-104	1.15 ± 0.01(-1)	1.12 ± 0.01(-1)	1.02 ± 0.01(-1)	1.75 ± 0.01(-1)	1.5 ± 0.2 (-1)	1.49 ± 0.02(-1)
Ba-141	3.3 ± 0.5 (-2)	2.0 ± 0.2 (-2)	4.4 ± 0.6 (-2)	5.6 + 0.9 (-2)	<4(-2)	4.6 ± 0.9 (-2)
Ba-142	7 ± 1 (-2)	1.28 ± 0.09(-2)	5.5 ± 0.7 (-2)	1.3 + 0.2 (-1)	<3(-1)	2.0 ± 0.4 (-1)
La-142	4 ± 1 (-3)	<3(-3)	5.8 ± 0.3 (-3)	3 ± 1 (-3)	3 ± 2 (-3)	<5(-3)

Table B.3-13 (cont'd)
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS IN REACTOR COOLANT
(microcuries/gram)

	Date and Time			
Nuclide	4-23-82 1842	4-23-82 2227	4-24-82 0120	4-24-82 0430
Cl-38	5.1 ± 0.5 (-3)	4.8 ± 0.5 (-3)	9 ± 3 (-4)	<5(-4)
Ni-65	<2(-3)	<2(-3)	<7(-4)	<3(-4)
Sr-92	2.16 ± 0.06(-2)	3.03 ± 0.05(-2)	3.64 ± 0.04(-2)	1.36 ± 0.01(-2)
Y-92	2.4 ± 0.9 (-3)	4.6 ± 0.7 (-3)	5.3 ± 0.5 (-3)	2.5 ± 0.4 (-3)
Nb-95m	1.01 ± 0.04(-2)	7.8 ± 0.6 (-3)	3.2 ± 0.3 (-3)	<4(-4)
Tc-99m	9.6 ± 0.1 (-2)	9.9 ± 0.1 (-2)	8.57 ± 0.08(-2)	8.70 ± 0.06(-2)
Tc-101	1.89 ± 0.01(-1)	2.06 ± 0.02(-1)	4.1 ± 0.9 (-2)	<8(-4)
Tc-104	1.48 ± 0.01(-1)	1.32 ± 0.01(-1)	2.04 ± 0.04(-2)	<5(-4)
Ba-141	3.6 ± 0.2 (-2)	4.6 ± 0.5 (-2)	1.5 ± 0.2 (-2)	<5(-4)
Ba-142	2.8 ± 0.5 (-2)	6.5 ± 0.9 (-2)	3.5 ± 0.5 (-2)	1.3 + 0.2 (-3)
La-142	<5(-3)	<3(-3)	<3(-3)	<3(-4)

Table B.3-14
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Nuclide	Date and Time 3-26-82 0834
Cl-38	1.55 ± 0.06(-2)
Ni-65	<2(-3)
Sr-92	2.88 ± 0.03(-2)
Y-92	2.5 ± 0.8 (-3)
Nb-95m	8.7 ± 0.5 (-3)
Tc-99m	7.59 ± 0.2 (-2)
Tc-101	1.43 ± 0.03(-1)
Tc-104	1.17 ± 0.01(-1)
Ba-141	5.7 ± 0.3 (-2)
Ba-142	4.6 ± 0.2 (-2)
La-142	1.1 ± 0.1 (-2)

Table B.3-15
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0853	4-11-82 0910	10-19-82 1206
^{131}I	5.44 ± 0.03(-4)	2.33 ± 0.01(-4)	6.02 ± 0.04(-5)
^{132}I	5.8 ± 0.1 (-3)	5.22 ± 0.01(-3)	8.0 ± 0.1 (-4)
^{133}I	2.88 ± 0.03(-3)	2.48 ± 0.01(-3)	1.06 ± 0.01(-3)
^{134}I	1.94 ± 0.02(-2)	1.41 ± 0.03(-2)	*
^{135}I	6.63 ± 0.06(-3)	5.85 ± 0.01(-3)	2.43 ± 0.01(-3)
^{138}Cs	2.96 ± 0.09(-2)	*	*
^{24}Na	1.64 ± 1.03(-6)	<2(-6)	<3(-7)
^{54}Mn	<2(-6)	1.1 ± 0.5 (-6)	2.4 ± 0.5 (-6)
^{59}Fe	<4(-6)	1.9 ± 0.8 (-6)	<3(-6)
^{58}Co	4 ± 1 (-5)	<7(-7)	<2(-6)
^{60}Co	<1(-6)	<2(-6)	8 ± 1 (-7)
^{65}Zn	<3(-6)	<5(-6)	<2(-6)
^{91}Sr	9.54 ± 0.07(-4)	7.8 ± 0.6 (-5)	3.87 ± 0.04(-4)
^{93}Y	<2(-4)	<2(-5)	2.5 ± 0.6 (-5)
^{95}Nb	<9(-7)	1.1 ± 0.3 (-6)	<5(-6)
^{99}Mo	<2(-5)	<2(-5)	<1(-5)
^{129}Te	1.1 ± 0.3 (-3)	<8(-4)	*
^{131m}Te	<6(-6)	<8(-6)	<3(-6)

Table B.3-15 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN MAIN STEAM
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0853	4-11-82 0910	10-19-82 1206
^{139}Ba	1.01 ± 0.05(-2)	2.8 ± 0.2 (-3)	5.6 ± 0.3 (-3)
^{140}Ba	4.3 ± 0.2 (-5)	<8(-6)	1.0 ± 0.2 (-5)
^{140}La	<5(-7)	<1(-6)	2.1 ± 0.6 (-6)
^{141}Ce	2 ± 1 (-6)	1.5 ± 0.7 (-6)	<2(-6)

* Radionuclide not measured.

Table B.3-16
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1152	4-24-82 1532
^{131}I	0.5[b]	0.6	0.9	0.3	0.3[b]	0.3[b]
^{132}I	0.2[b]	0.3[b]	0.8	*	0.3[b]	d
^{133}I	0.3	0.4	0.9	0.3[b]	0.3	0.5
^{134}I	0.8	0.3[b]	*	*	*	*
^{135}I	0.3[b]	0.4	0.9	*	0.3	*
^{134}Cs	5.7[b]	<22[b]	9.0[b]	10[b]	8.6[b]	10[b]
^{136}Cs	8.7[b]	8.9[b]	7.8	9.4[b]	7.7[b]	9.5[b]
^{137}Cs	11	<34	9.3	9.4[b]	7.9[b]	9.6[b]
^{138}Cs	*	8.2[b]	*	*	*	*
^{24}Na	2.0[b]	1.5[b]	2.0	2.4[b]	1.8[b]	2.4[b]
^{51}Cr	1.4	4.1	0.4	1.2	5.6	29[b]
^{54}Mn	57[b]	77	36[b]	24[b]	33[b]	41[b]
^{56}Mn	>16	67[b]	28[b]	*	19[b]	*
^{59}Fe	82	83	*	68	55	72[b]
^{58}Co	19[b]	53[b]	*	20[b]	21[b]	31[b]
^{60}Co	28[b]	61[b]	30[b]	26[b]	32[b]	39[b]
^{65}Zn	15[b]	27[b]	*	7.6	16[b]	24[b]
^{91}Sr	13[b]	15[b]	14[b]	9.2	16[b]	*
^{91m}Y	*	11	*	*	*	*
^{93}Y	5.8	*	<10	12[b]	<5.9	19[b]

Table B.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1152	4-24-82 1532
^{95}Zr	*	*	*	*	*	50
^{95}Nb	*	>79	*	*	*	62[b]
^{99}Mo	0.3	0.9	0.3[b]	0.4[b]	1.2	<1.4
^{103}Ru	>57	87	*	*	>47	82[b]
^{129}Te	*	<13[b]	*	*	*	*
^{132}Te	*	*	*	*	<0.8[b]	*
^{139}Ba	36[b]	26[b]	*	*	*	*
^{140}Ba	35[b]	76[b]	23	12[b]	24[b]	26[b]
^{140}La	*	*	13[b]	*	18[b]	26[b]
^{141}Ce	23	<64[b]	*	*	*	>51
^{144}Ce	*	>81	*	*	>63	*
^{152}Eu	*	>95[b]	*	*	*	*
^{239}Np	2.9[b]	2.2	1.4[b]	2.8[b]	1.6	1.7

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

c. Percent calculated using a less-than filtrate value.

Table B.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 9-27-82 0930	9-28-82 1500	9-29-82 0940
^{134}Cs	33[b]	12	<1.3
^{137}Cs	4.1	15	1.9
^{54}Mn	0.7[b]	8.0[b]	6.4[b]
^{58}Co	8.5[b]	8.5[b]	1.4[b]
^{60}Co	12[b]	7.1[b]	1.6[b]
^{65}Zn	19	9.2[b]	1.7[b]
^{143}Ce	<9.5	*	*

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040
^{131}I	*	<7.4[b]	<1.2
^{133}I	*	<54[b]	0.4
^{135}I	*	<3.9	*
^{137}Cs	14	*	8.0
^{24}Na	*	<1.5[b]	1.1
^{51}Cr	15	18[b]	22
^{54}Mn	57[b]	51	13[b]
^{59}Fe	55	52	23[b]
^{58}Co	0.6[b]	35[b]	3.7
^{60}Co	38[b]	41[b]	3.6[b]
^{65}Zn	42[b]	39[b]	6.5
^{95}Nb	60	*	30[b]
^{103}Ru	*	*	32
^{110m}Ag	*	*	20
^{132}Te	*	*	4.5[b]

Table B.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040
^{140}Ba	*	*	5.0
^{144}Ce	52	43	*
^{239}Np	*	<1.2[b]	1.2[b]

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table 8.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time		
	10-2-82 1240	10-2-82 2030	10-6-82 1617
^{131}I	0.8	0.3	0.4
^{133}I	0.6[b]	0.3	0.4
^{137}Cs	7.3	7.7	18
^{24}Na	<1.1[b]	1.2	1.0[b]
^{51}Cr	15	3.7[b]	4.1
^{54}Mn	12[b]	5.8[b]	67[b]
^{59}Fe	22	15[b]	*
^{58}Co	3.3[b]	2.0	29[b]
^{60}Co	3.3[b]	2.5	39
^{65}Zn	6.6[b]	1.7	18[b]
^{91}Sr	*	*	4.4[b]
^{93}Y	*	*	<2.4[b]
^{95}Nb	39	*	*
^{99}Mo	<3.3	<8.9	0.3
^{110m}Ag	23	6.4[b]	17
^{140}Ba	*	6.9[b]	48
^{140}La	*	*	1.8[b]
^{141}Ce	*	8.0	10[b]

Table B.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 10-2-82 1240	10-2-82 2030	10-6-82 1617
^{144}Ce	16[b]	*	*
^{239}Np	0.7	0.8[b]	1.3[b]

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-16 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM INLET

Nuclide	Date and Time 10-24-82 1340
^{131}I	0.5[b]
^{132}I	0.4[b]
^{133}I	0.5[b]
^{134}I	0.5[b]
^{135}I	0.5[b]
^{24}Na	0.5[b]
^{51}Cr	1.4[b]
^{54}Mn	24[b]
^{56}Mn	24[b]
^{58}Co	26
^{60}Co	40[b]
^{91}Sr	0.6[b]
^{95}Nb	0.3[b]
^{139}Ba	2.0[b]
^{140}Ba	13[b]
^{140}La	2.4[b]
^{230}Np	0.7[b]

* No sum value to allow for percent calculation.
b. Sum and grab values do not agreee.

Table B.3-17
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0835	5-7-82 1013	5-13-82 1010	5-18-82 1342	5-25-82 1336	5-31-82 1126
^{131}I	2.6 ± 0.5 (-7)	<3(-7)	<3(-7)	1.3 ± 0.5 (-7)	1.7 ± 0.5 (-7)	2.2 ± 0.3 (-7)
^{132}I	3.7 ± 0.5 (-6)	<2(-6)	2.0 ± 0.3 (-6)	2.1 ± 0.3 (-6)	2.6 ± 0.3 (-6)	2.8 ± 0.2 (-6)
^{133}I	2.1 ± 0.3 (-6)	9 ± 1 (-7)	1.14 ± 0.09(-6)	7 ± 2 (-7)	9.8 ± 0.5 (-7)	1.2 ± 0.1 (-6)
^{135}I	<5(-6)	3.5 ± 0.7 (-6)	2.4 ± 0.3 (-6)	1.4 ± 0.3 (-6)	2.2 ± 0.2 (-6)	2.5 ± 0.2 (-6)
^{24}Na	1.92 ± 0.03(-4)	<2(-7)	<3(-7)	1.3 ± 0.5 (-7)	1.1 ± 0.3 (-7)	1.5 ± 0.6 (-7)
^{51}Cr	9.7 ± 0.3 (-6)	6.7 ± 0.7 (-6)	1.6 ± 0.3 (-6)	4.4 ± 0.3 (-6)	1.09 ± 0.03(-5)	2.2 ± 0.1 (-5)
^{54}Mn	6.6 ± 0.6 (-7)	<2(-7)	<2(-7)	<7(-8)	<6(-8)	<6(-8)
^{56}Mn	1.2 ± 0.1 (-5)	<5(-6)	<2(-6)	<2(-6)	<2(-6)	1.4 ± 0.6 (-6)
^{59}Fe	<3(-7)	<4(-7)	<2(-7)	<1(-7)	<2(-7)	<7(-8)
^{58}Co	5.3 ± 0.4 (-7)	<3(-7)	<2(-7)	<7(-8)	<7(-8)	<8(-8)
^{60}Co	5 ± 2 (-7)	<4(-7)	2.4 ± 0.9 (-7)	<2(-7)	1.2 ± 0.6 (-7)	<2(-7)
^{110m}Ag	<3(-7)	<2(-7)	<1(-7)	<7(-8)	5 ± 2 (-8)	<6(-8)
^{139}Ba	1.1 ± 0.5 (-5)	<2(-5)	1.1 ± 0.5 (-5)	<3(-5)	<5(-5)	<2(-5)
^{140}Ba	3 ± 1 (-7)	<7(-7)	<5(-7)	<4(-7)	<2(-7)	<3(-7)

Table B.3-17
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time 6-8-82 1116	7-1-82 0845	8-12-82 1333	9-28-82 0930	10-9-82 1208	10-10-82 0100
^{131}I	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<8(-8)	<3(-7)
^{132}I	*	<2(-6)	<5(-7)	*	<2(-7)	<1(-6)
^{133}I	<5(-7)	1.3 ± 0.3 (-6)	<3(-7)	<4(-7)	<1(-7)	<5(-7)
^{135}I	<8(-6)	<4(-6)	<6(-7)	<2(-5)	<3(-7)	<7(-7)
^{24}Na	4.03 ± 0.09(-5)	9.7 ± 0.2 (-5)	<5(-8)	<2(-7)	<4(-8)	<7(-8)
^{51}Cr	6.6 ± 0.1 (-5)	1.1 ± 0.1 (-5)	6.0 ± 0.5 (-6)	<2(-6)	<7(-7)	7 ± 1 (-6)
^{54}Mn	2.57 ± 0.05(-5)	3 ± 1 (-7)	5.13 ± 0.06(-5)	2.7 ± 0.2 (-6)	2.63 ± 0.09(-6)	5.37 ± 0.06(-5)
^{56}Mn	<4(-4)	<4(-6)	<8(-7)	*	<4(-7)	2.3 ± 0.4 (-6)
^{59}Fe	8.6 ± 0.3 (-6)	<4(-7)	2.2 ± 0.1 (-6)	<3(-7)	4.3 ± 0.4 (-7)	1.30 ± 0.06(-5)
^{58}Co	9.1 ± 0.2 (-6)	1.7 ± 0.6 (-7)	1.24 ± 0.02(-5)	9 ± 1 (-7)	3.9 ± 0.3 (-7)	4.5 ± 0.2 (-6)
^{60}Co	1.40 ± 0.03(-5)	5 ± 1 (-7)	3.19 ± 0.05(-5)	3.0 ± 0.2 (-7)	2.5 ± 0.1 (-6)	3.91 ± 0.06(-5)
^{110m}Ag	2.9 ± 0.6 (-7)	1.5 ± 0.4 (-7)	3.5 ± 0.5 (-7)	1.4 ± 0.5 (-7)	<9(-8)	<8(-7)
^{139}Ba	*	<2(-5)	<2(-6)	*	<9(-7)	<6(-6)
^{140}Ba	<7(-7)	<6(-7)	<2(-6)	<5(-7)	<4(-7)	<1(-6)

* Radionuclide not measured.

Table B.3-17 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram

Nuclide	Date and Time 10-19-82 1447
^{131}I	<2(-7)
^{132}I	<7(-7)
^{133}I	1.6 ± 0.2 (-6)
^{135}I	3.0 ± 0.7 (-6)
^{24}Na	9.8 ± 0.1 (-5)
^{51}Cr	3.5 ± 0.5 (-6)
^{54}Mn	2.3 ± 0.2 (-6)
^{56}Mn	1.15 ± 0.04 (-5)
^{59}Fe	<4(-7)
^{58}Co	<3(-7)
^{60}Co	1.3 ± 0.2 (-6)
^{110m}Ag	2.1 ± 0.3 (-7)
^{139}Ba	4 ± 2 (-6)
^{140}Ba	<4(-7)

Table B.3-18
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 6/8/82
Time: 1117

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{24}Na	<3(-7)	3.8 ± 0.1 (-5)	3.8 ± 0.1 (-5)	4.03 ± 0.09(-5)
^{51}Cr	7.4 ± 0.1 (-5)	8 ± 1 (-6)	8.2 ± 0.1 (-5)[b]	6.6 ± 0.1 (-5)
^{54}Mn	1.19 ± 0.03(-5)	8.8 ± 0.3 (-6)	2.07 ± 0.04(-5)[b]	2.57 ± 0.05(-5)
^{59}Fe	9.9 ± 0.1 (-6)	1.2 ± 0.2 (-6)	1.11 ± 0.02(-5)[b]	8.6 ± 0.3 (-6)
^{58}Co	3.14 ± 0.07(-6)	3.1 ± 0.2 (-6)	6.2 ± 0.2 (-6)[b]	9.1 ± 0.2 (-6)
^{60}Co	8.1 ± 0.1 (-6)	3.8 ± 0.3 (-6)	1.19 ± 0.03(-5)[b]	1.40 ± 0.03(-5)
^{65}Zn	3.6 ± 0.5 (-7)	<6(-7)	a	<7(-7)
^{110m}Ag	<5(-8)	1.6 ± 0.6 (-7)	a	2.9 ± 0.6 (-7)
^{124}Sb	1.1 ± 0.2 (-7)	<2(-7)	a	<4(-7)
^{187}W	1.6 ± 0.2 (-6)	<2(-6)	a	2.1 ± 0.4 (-6)

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table 8.3-18 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 7/1/82
Time: 0845

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{133}I	<7(-7)	<5(-6)	a	1.3 ± 0.3 (-6)
^{134}Cs	3.6 ± 0.7 (-8)	4.8 ± 0.4 (-7)	5.2 ± 0.4 (-7)	4.4 ± 0.6 (-7)
^{137}Cs	6 ± 1 (-8)	4.3 ± 0.6 (-7)	4.9 ± 0.6 (-7)	4 ± 1 (-7)
^{24}Na	<2(-6)	9 + 1 (-5)	1.0 ± 0.1 (-4)	9.7 ± 0.2 (-5)
^{51}Cr	1.50 ± 0.03(-5)	1.0 ± 0.4 (-6)	1.61 ± 0.05(-5)[b]	1.1 ± 0.1 (-5)
^{54}Mn	4.4 ± 0.2 (-7)	1.4 ± 0.5 (-7)	5.8 ± 0.7 (-7)	3 ± 1 (-7)
^{59}Fe	3.0 ± 0.2 (-7)	<1(-7)	a	2.6 ± 0.7 (-7)
^{58}Co	1.0 ± 0.1 (-7)	<2(-7)	a	1.7 ± 0.6 (-7)
^{60}Co	5.2 ± 0.3 (-7)	4 ± 1 (-7)	1.0 ± 0.1 (-6)[b]	5 + 1 (-7)
^{110m}Ag	8 ± 1 (-8)	8 ± 3 (-8)	1.6 ± 0.3 (-7)	1.5 ± 0.4 (-7)
^{124}Sb	<6(-8)	8 ± 4 (-8)	a	<2(-7)

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-18 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0930

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<4(-8)	<2(-7)	a	<2(-7)
^{132}I	*	*	*	*
^{133}I	<2(-5)	<3(-5)	a	<4(-7)
^{135}I	*	*	*	<2(-5)
^{24}Na	*	*	*	<2(-7)
^{51}Cr	4.2 ± 0.8 (-7)	<8(-7)	a	<2(-6)
^{54}Mn	1.23 ± 0.03(-6)	1.06 ± 0.06(-6)	2.29 ± 0.07(-6)	2.7 ± 0.2 (-6)
^{56}Mn	*	*	*	*
^{59}Fe	2.5 ± 0.2 (-7)	<2(-7)	a	<3(-7)
^{58}Co	1.1 ± 0.2 (-7)	5.7 ± 0.3 (-7)	6.8 ± 0.4 (-7)	9 ± 1 (-7)
^{60}Co	1.33 ± 0.03(-6)	<5(-7)	a	3.0 ± 0.2 (-7)
^{110m}Ag	<7(-8)	<2(-7)	a	1.4 ± 0.5 (-7)
^{139}Ba	*	*	*	*
^{140}Ba	<9(-8)	<4(-7)	a	<5(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-18 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0100

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<7(-8)	<8(-8)	a	<3(-7)
^{132}I	*	<2(-5)	a, *	<1(-6)
^{133}I	<3(-7)	<2(-7)	a	<5(-7)
^{135}I	<4(-6)	<9(-7)	a	<7(-7)
^{24}Na	<4(-8)	<8(-8)	a	<7(-8)
^{51}Cr	1.00 ± 0.04(-5)	2.0 ± 0.3 (-6)	1.20 ± 0.05(-5)[b]	7 ± 1 (-6)
^{54}Mn	6.4 ± 0.1 (-5)	1.91 ± 0.02(-5)	8 ± 1 (-5)[b]	5.37 ± 0.06 (-5)
^{56}Mn	*	<2(-5)	a, *	2.3 ± 0.4 (-6)
^{59}Fe	1.57 ± 0.02(-5)	3.6 ± 0.1 (-6)	1.93 ± 0.02(-5)[b]	1.30 ± 0.06 (-5)
^{58}Co	4.4 ± 0.1 (-6)	1.50 ± 0.06(-6)	5.9 ± 0.1 (-6)[b]	4.5 ± 0.2 (-6)
^{60}Co	3.50 ± 0.03(-5)	1.52 ± 0.02(-5)	5.02 ± 0.04(-5)[b]	3.91 ± 0.06 (-5)
^{110m}Ag	<3(-7)	1.1 ± 0.3 (-7)	a	<8(-7)
^{139}Ba	*	*	*	<6(-6)
^{140}Ba	<5(-7)	<4(-7)	a	<1(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-19
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-17-82 0837	4-12-82 1335	5-7-82 1022	5-13-82 1008	5-18-82 1347	5-25-82 1340
^{131}I	<2(-7)	<9(-8)	<2(-7)	<3(-7)	<2(-7)	<7(-8)
^{132}I	<2(-7)	<3(-7)	<2(-5)	<3(-7)	<1(-6)	<3(-6)
^{133}I	<7(-8)	<1(-7)	3 ± 1 (-7)	1.9 ± 0.6 (-7)	<3(-7)	<2(-7)
^{135}I	<4(-7)	<2(-7)	<4(-6)	<5(-7)	<4(-7)	<7(-7)
^{24}Na	<8(-8)	<5(-8)	<4(-7)	<2(-7)	1.7 ± 0.4 (-7)	8.9 ± 0.4 (-6)
^{51}Cr	<6(-7)	<6(-7)	<2(-6)	<3(-6)	1.1 ± 0.5 (-6)	<8(-7)
^{54}Mn	<8(-8)	1.03 ± 0.02(-5)	<3(-7)	<1(-7)	1.7 ± 0.4 (-7)	2.8 ± 0.9 (-7)
^{56}Mn	<7(-7)	<4(-7)	<6(-5)	<9(-7)	<3(-7)	<4(-6)
^{59}Fe	<2(-7)	<2(-7)	<3(-7)	<3(-7)	<1(-7)	<2(-7)
^{58}Co	<5(-8)	3.4 ± 0.1 (-6)	1.5 ± 0.7 (-7)	<8(-8)	<8(-8)	6 ± 3 (-8)
^{60}Co	2.7 ± 0.8 (-7)	6.0 ± 0.2 (-6)	<4(-7)	<2(-7)	<2(-7)	<2(-7)
^{110m}Ag	<6(-8)	2.6 ± 0.6 (-7)	<2(-7)	<2(-7)	<2(-7)	<2(-7)
^{139}Ba	<7(-7)	<6(-7)	*	<4(-6)	<3(-5)	<6(-5)
^{140}Ba	<3(-7)	<7(-7)	<8(-7)	<6(-7)	<3(-7)	<2(-7)

* Radionuclide not measured.

Table B.3-19 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-31-82 1120	6-8-82 1120	9-28-82 0930	10-8-82 1624	10-9-82 1206	10-10-82 0130
^{131}I	<6(-8)	<4(-7)	<3(-7)	<6(-8)	<2(-7)	<2(-7)
^{132}I	<2(-6)	*	*	<8(-6)	<2(-7)	<5(-7)
^{133}I	<8(-8)	<7(-7)	<6(-7)	<2(-7)	<2(-7)	<2(-7)
^{135}I	<5(-7)	<8(-6)	<5(-6)	<8(-7)	<2(-7)	<3(-7)
^{24}Na	<2(-7)	5.1 ± 0.2 (-5)	<4(-7)	<8(-8)	<5(-8)	<2(-7)
^{51}Cr	<7(-7)	<2(-6)	<2(-6)	<9(-7)	<7(-7)	<2(-6)
^{54}Mn	<6(-8)	6 ± 1 (-5)	3.2 ± 0.2 (-6)	1.72 ± 0.06(-6)	6.9 ± 0.7 (-7)	3.0 ± 0.2 (-6)
^{56}Mn	<6(-6)	<5(-4)	*	<2(-5)	<4(-7)	<2(-6)
^{59}Fe	<9(-8)	<6(-7)	<7(-7)	<8(-8)	<9(-8)	<4(-7)
^{58}Co	5 ± 2 (-8)	2.12 ± 0.06(-5)	9 ± 1 (-7)	4.2 ± 0.4 (-7)	3.8 ± 0.4 (-7)	5.6 ± 0.7 (-7)
^{60}Co	<2(-7)	2.14 ± 0.06(-5)	2.0 ± 0.2 (-6)	1.2 ± 0.1 (-6)	<5(-7)	2.4 ± 0.2 (-6)
^{110m}Ag	<7(-8)	6 ± 1 (-7)	<3(-7)	<3(-7)	<2(-7)	<5(-7)
^{139}Ba	<5(-5)	*	*	*	<2(-6)	<4(-6)
^{140}Ba	<2(-7)	<1(-6)	<8(-7)	<4(-7)	<5(-7)	<7(-7)

* Radionuclide not measured.

Table B.3-19 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 10-19-82 1443
^{131}I	<1(-7)
^{132}I	<4(-7)
^{133}I	<9(-8)
^{135}I	<5(-7)
^{24}Na	3.58 ± 0.07(-5)
^{51}Cr	<2(-6)
^{54}Mn	7.3 ± 0.6 (-7)
^{56}Mn	<1(-6)
^{59}Fe	<2(-7)
^{58}Co	1.8 ± 0.6 (-7)
^{60}Co	6 ± 1 (-7)
^{110m}Ag	<3(-7)
^{139}Ba	<3(-6)
^{140}Ba	<3(-7)

Table B.3-20
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1014
^{131}I	<1(-6)
^{132}I	<8(-7)
^{133}I	<3(-7)
^{135}I	<6(-7)
^{24}Na	<4(-7)
^{51}Cr	<5(-6)
^{54}Mn	<4(-7)
^{56}Mn	<3(-6)
^{59}Fe	<5(-7)
^{58}Co	<3(-7)
^{60}Co	<7(-7)
^{110m}Ag	<3(-7)
^{139}Ba	<3(-6)
^{140}Ba	<1(-6)

Table B.3-21
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1015
^{131}I	<7(-7)
^{132}I	<2(-6)
^{133}I	<6(-7)
^{135}I	<2(-6)
^{24}Na	<5(-7)
^{51}Cr	<2(-5)
^{54}Mn	<5(-7)
^{56}Mn	<3(-6)
^{59}Fe	<6(-7)
^{58}Co	<5(-7)
^{60}Co	<2(-6)
^{110m}Ag	<6(-7)
^{139}Ba	<7(-6)
^{140}Ba	<2(-6)

Table B.3-22
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "C" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1016	5-31-82 1125
^{131}I	<2(-7)	<8(-8)
^{132}I	*	<4(-7)
^{133}I	<8(-6)	<8(-8)
^{135}I	*	<6(-7)
^{24}Na	<1(-5)	<2(-7)
^{51}Cr	<2(-6)	9 ± 3 (-7)
^{54}Mn	<4(-7)	9 ± 3 (-8)
^{56}Mn	*	<2(-6)
^{59}Fe	<4(-7)	<9(-8)
^{58}Co	<2(-7)	<5(-8)
^{60}Co	<7(-7)	<2(-7)
^{110m}Ag	<3(-7)	<1(-7)
^{139}Ba	*	<2(-5)
^{140}Ba	<7(-7)	<3(-7)

* Radionuclide not measured.

Table B.3-23
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1017	5-31-82 1123
^{131}I	<2(-6)	<8(-8)
^{132}I	<1(-6)	<8(-7)
^{133}I	1.71 ± 0.56 (-6)	1.5 ± 0.4 (-7)
^{135}I	<4(-6)	<4(-7)
^{24}Na	<7(-7)	1.3 ± 0.3 (-7)
^{51}Cr	<2(-5)	<5(-7)
^{54}Mn	<2(-6)	7.4 ± 3.6 (-8)
^{56}Mn	<3(-6)	<3(-6)
^{59}Fe	<3(-6)	<9(-8)
^{58}Co	<3(-6)	8 ± 4 (-8)
^{60}Co	<4(-6)	<2(-7)
^{110m}Ag	<9(-7)	5 ± 2 (-8)
^{139}Ba	<2(-5)	<3(-5)
^{140}Ba	<5(-6)	<3(-7)

Table B.3-24

UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 6/8/82
Time: 1121

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{24}Na	3 ± 1 (-7)	5.6 ± 0.2 (-5)	5.6 ± 0.2 (-5)	5.1 ± 0.2 (-5)
^{51}Cr	<4(-7)	<2(-6)	a	<2(-6)
^{54}Mn	7.6 ± 0.7 (-7)	3.28 ± 0.09(-5)	3.36 ± 0.09(-5)[b]	6 ± 1 (-5)
^{59}Fe	<7(-8)	<2(-7)	a	<6(-7)
^{58}Co	3.0 ± 0.2 (-7)	1.02 ± 0.02(-5)	1.05 ± 0.02(-5)[b]	2.12 ± 0.06(-5)
^{60}Co	<2(-7)	1.06 ± 0.03(-5)	1.07 ± 0.03(-5)[b]	2.14 ± 0.06(-5)
^{65}Zn	<6(-8)	<4(-7)	a	<9(-7)
^{110m}Ag	3 ± 1 (-8)	2.1 ± 0.6 (-7)	2.4 ± 0.6 (-7)	6 ± 1 (-7)

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-24 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9/28/82
Time: 0930

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<3(-8)	<2(-7)	a	<3(-7)
^{132}I	*	*	*	*
^{133}I	<2(-5)	<3(-5)	a	<6(-7)
^{135}I	*	*	*	<5(-6)
^{24}Na	*	*	*	<4(-7)
^{51}Cr	<2(-7)	<8(-7)	a	<2(-6)
^{54}Mn	3 ± 1 (-8)	2.44 ± 0.07(-6)	2.47 ± 0.07(-6)[b]	3.2 ± 0.2 (-6)
^{56}Mn	*	*	*	*
^{59}Fe	<4(-8)	<1(-7)	a	<7(-7)
^{58}Co	<2(-8)	8.9 ± 0.5 (-7)	9.0 ± 0.5 (-7)	9 ± 1 (-7)
^{60}Co	7 ± 2 (-8)	<6(-7)	a	2.0 ± 0.2 (-6)
^{110m}Ag	<3(-8)	<2(-7)	a	<3(-7)
^{139}Ba	*	*	*	*
^{140}Ba	<9(-8)	<6(-7)	a	<8(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-24 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0103

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<2(-8)	<4(-7)	a	<2(-7)
^{133}I	<6(-8)	<5(-7)	a	<2(-7)
^{135}I	<3(-6)	<3(-6)	a	<3(-7)
^{134}Cs	<3(-8)	<3(-7)	a	<2(-7)
^{137}Cs	<4(-8)	<3(-7)	a	<2(-7)
^{24}Na	<8(-8)	<2(-7)	a	<2(-7)
^{51}Cr	<2(-7)	<2(-6)	a	<2(-6)
^{54}Mn	5 ± 2 (-8)	2.8 ± 0.2 (-6)	2.9 ± 0.2 (-6)	3.0 ± 0.2 (-6)
^{59}Fe	<4(-8)	<4(-7)	a	<4(-7)
^{58}Co	<3(-8)	8 ± 1 (-7)	8 ± 1 (-7)[b]	5.6 ± 0.7 (-7)
^{60}Co	<6(-8)	3.4 ± 0.3 (-6)	3.4 ± 0.3 (-6)[b]	2.4 ± 0.2 (-6)
^{65}Zn	<4(-8)	<4(-7)	a	<3(-7)
^{91}Sr	<6(-7)	<2(-6)	a	<6(-7)
^{95}Zr	<4(-8)	<5(-7)	a	<3(-7)
^{95}Nb	<2(-8)	<2(-7)	a	<2(-7)
^{99}Mo	<2(-7)	<3(-6)	a	<1(-6)
^{132}Te	<2(-8)	<3(-7)	a	<9(-8)

Table B.3-24 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0103

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	<6(-4)	a, *	<4(-6)
^{140}Ba	<8(-8)	<7(-7)	a	<7(-7)
^{239}Np	<2(-7)	<9(-7)	a	<5(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-25
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	5-13-82 1006	5-18-82 1345	5-25-82 1343	5-31-82 1118	7-1-82 0840
^{131}I	<2(-7)	<9(-8)	<5(-8)	<4(-8)	<7(-8)
^{132}I	<3(-7)	<2(-6)	<4(-6)	<5(-7)	<2(-7)
^{133}I	<9(-8)	<2(-7)	<1(-7)	<5(-8)	<6(-8)
^{135}I	<4(-7)	<8(-7)	<7(-7)	<2(-7)	<4(-7)
^{24}Na	<1(-7)	<1(-7)	<6(-8)	<3(-8)	<2(-7)
^{51}Cr	<6(-7)	<7(-7)	<4(-7)	<3(-7)	<2(-6)
^{54}Mn	<2(-7)	<9(-8)	<6(-8)	<1(-7)	<1(-7)
^{56}Mn	<5(-7)	<5(-6)	<2(-5)	<4(-7)	<5(-7)
^{59}Fe	<2(-7)	<9(-8)	<2(-5)	1.2 ± 0.3 (-7)	<2(-7)
^{58}Co	<2(-7)	<2(-7)	<4(-8)	<5(-8)	<7(-8)
^{60}Co	<2(-7)	<2(-7)	<2(-7)	3.7 ± 0.8 (-7)	<2(-7)
^{110m}Ag	<7(-7)	<7(-8)	<5(-8)	*	*
^{139}Ba	<2(-6)	<6(-5)	*	<5(-6)	<6(-7)
^{140}Ba	<4(-7)	<5(-7)	<3(-7)	1.1 ± 0.6 (-7)	<6(-7)

* Radionuclide not measured.

Table B.3-25 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-28-82 0930	10-8-82 1624	10-10-82 0105	10-19-82 1443
^{131}I	<2(-7)	<5(-8)	<2(-7)	<2(-7)
^{132}I	*	<3(-7)	<7(-7)	<4(-5)
^{133}I	<4(-7)	<6(-8)	<2(-7)	<2(-7)
^{135}I	<6(-6)	<2(-7)	<4(-7)	<3(-6)
^{24}Na	<2(-7)	4 ± 1 (-8)	<5(-8)	<2(-7)
^{51}Cr	<5(-7)	<5(-7)	<2(-6)	<9(-7)
^{54}Mn	<8(-8)	<8(-8)	<3(-7)	<9(-8)
^{56}Mn	*	<5(-7)	<2(-6)	<8(-5)
^{59}Fe	<8(-8)	<8(-8)	<2(-7)	<2(-7)
^{58}Co	<6(-8)	<6(-8)	<4(-7)	<2(-7)
^{60}Co	<2(-7)	<4(-7)	<4(-7)	<2(-7)
^{110m}Ag	<8(-8)	<7(-8)	<2(-7)	<8(-8)
^{139}Ba	*	<2(-6)	<5(-6)	*
^{140}Ba	<4(-7)	<3(-7)	<5(-7)	<4(-7)

* Radionuclide not measured.

Table B.3-26
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1024
^{131}I	<7(-8)
^{132}I	*
^{133}I	<2(-7)
^{135}I	<8(-6)
^{24}Na	<4(-7)
^{51}Cr	<8(-7)
^{54}Mn	<6(-8)
^{56}Mn	*
^{59}Fe	<8(-8)
^{58}Co	<4(-8)
^{60}Co	<2(-7)
^{110m}Ag	<5(-8)
^{139}Ba	*
^{140}Ba	<2(-7)

* Radionuclide not measured.

Table B.3-27
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1025
^{131}I	<6(-8)
^{132}I	<2(-6)
^{133}I	<6(-8)
^{135}I	<5(-7)
^{24}Na	<4(-8)
^{51}Cr	<3(-7)
^{54}Mn	<6(-8)
^{56}Mn	<1(-6)
^{59}Fe	<9(-8)
^{58}Co	<7(-8)
^{60}Co	<2(-7)
^{110m}Ag	<5(-8)
^{139}Ba	<2(-5)
^{140}Ba	<2(-7)

Table B.3-28
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "D" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-7-82 1031
^{131}I	<7(-8)
^{132}I	*
^{133}I	<4(-7)
^{135}I	<4(-5)
^{24}Na	<3(-7)
^{51}Cr	<5(-7)
^{54}Mn	<2(-7)
^{56}Mn	*
^{59}Fe	<2(-7)
^{58}Co	<7(-8)
^{60}Co	<3(-7)
^{110m}Ag	<5(-8)
^{139}Ba	*
^{140}Ba	<3(-7)

* Radionuclide not measured.

Table B.3-29
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET
(microcuries/gram)

	Date and Time
Nuclide	5-7-82 1033
^{131}I	<2(-7)
^{132}I	*
^{133}I	<2(-6)
^{135}I	*
^{24}Na	<3(-6)
^{51}Cr	<2(-6)
^{54}Mn	<2(-7)
^{56}Mn	*
^{59}Fe	<2(-7)
^{58}Co	<1(-7)
^{60}Co	<3(-7)
^{110m}Ag	<2(-7)
^{139}Ba	*
^{140}Ba	<4(-7)

* Radionuclide not measured.

Table B.3-30
UNIT NO. 1 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

	Date-and-Time
Nuclide	3-17-82 0835
Cl-38	2.7 ± 0.6 (-5)
Ni-65	<2(-5)
Sr-92	<4(-6)
Y-92	<1(-5)
Nb-95m	<7(-6)
Tc-99m	3.14 ± 0.04(-4)
Tc-101	5.9 ± 0.7 (-5)
Tc-104	<2(-5)
Ba-141	<2(-5)
Ba-142	<9(-5)
La-142	<3(-5)

Table B.3-31
UNIT NO. 1 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

	Date and Time
Nuclide	3-17-82 0837
Cl-38	<7(-7)
Ni-65	<9(-7)
Sr-92	<3(-7)
Y-92	<2(-6)
Nb-95m	<6(-7)
Tc-99m	<3(-7)
Tc-101	<5(-7)
Tc-104	<4(-7)
Ba-141	<8(-7)
Ba-142	<4(-6)
La-142	<2(-6)

Table B.3-32
DF'S FOR UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 3-17-82 0837	5-7-82 1022	5-13-82 1008	5-18-82 1347	5-25-82 1340	5-31-82 1120
^{131}I	>1	c	c	<7(-1)	>2	>3
^{132}I	>19	c	>7	>2	<9(-1)	>1
^{133}I	>30	3 ± 1	6 ± 2	>2	>5	>15
^{134}I	d	d	d	d	d	d
^{135}I	c	c	>5	>3	>3	>5
^{24}Na	>2.4(3)	c	c	8 ± 3 (-1)	1.2 ± 0.3 (-2)	<8(-1)
^{51}Cr	>16	>3	<5(-1)	4 ± 2	>13	>31
^{54}Mn	>8	c	c	<5(-1)	<3(-1)	c
^{56}Mn	>17	c	c	d	d	d
^{59}Fe	d	d	d	d	d	d
^{58}Co	>10	<2	c	c	<2	<2
^{60}Co	1.8 ± 0.9	c	>1	c	<6(-1)	c
^{110m}Ag	c	c	c	c	<3(-1)	c
^{139}Ba	>16	d	>4	c	c	c
^{140}Ba	>1	c	c	d	d	d

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-32 (cont'd)
DF'S FOR UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 6-8-82 1120	8-12-82 1335	9-28-82 0930	10-9-83 1206	10-10-83 0130	10-19-83 1443
^{131}I	c	c	c	c	c	c
^{132}I	d	c	d	c	c	c
^{133}I	c	c	c	c	c	>18
^{134}I	d	d	d	c	c	4.9 ± 0.9 (-1)
^{135}I	c	c	c	c	c	>6
^{24}Na	7.9 ± 0.4 (-1)	c	c	c	c	2.70 ± 0.06
^{51}Cr	>33	>10	c	c	>3	>1
^{54}Mn	4.3 ± 0.7 (-1)	5.0 ± 0.1	8.4 ± 0.8 (-1)	3.8 ± 0.4	1.8 ± 0.1 (1)	3.2 ± 0.4
^{56}Mn	d	c	d	c	>1	>1
^{59}Fe	d	>11	c	>4	>33	c
^{58}Co	4.3 ± 0.1 (-1)	3.6 ± 0.1	1.0 ± 0.2	1.0 ± 0.1	8 ± 1	d
^{60}Co	6.5 ± 0.2 (-1)	5.3 ± 0.2	1.5 ± 0.2 (-1)	>5	1.6 ± 0.1 (1)	2.2 ± 0.5
^{110m}Ag	5 ± 1 (-1)	1.3 ± 0.4	>0	c	c	>0
^{139}Ba	d	c	d	c	c	>1
^{140}Ba	d	c	c	c	c	c

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-33
DF'S FOR UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER "A"

Nuclide	Date: 5-7-82 Time: 1014
^{131}I	c
^{132}I	c
^{133}I	>3
^{135}I	>6
^{24}Na	c
^{51}Cr	>1
^{54}Mn	c
^{56}Mn	c
^{59}Fe	d
^{58}Co	c
^{60}Co	c
^{110m}Ag	c
^{139}Ba	c
^{140}Ba	c

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-34
DF'S FOR UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date: 5-7-82 Time: 1015
^{131}I	c
^{132}I	c
^{133}I	>1
^{135}I	>2
^{24}Na	c
^{51}Cr	<3(-1)
^{54}Mn	c
^{56}Mn	c
^{59}Fe	d
^{58}Co	c
^{60}Co	c
^{110m}Ag	c
^{139}Ba	c
^{140}Ba	c

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-35
DF'S FOR UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER "C"

Nuclide	Date: 5-7-82 Time: 1016	Date: 5/31/82 Time: 1125
^{131}I	c	>2
^{132}I	d	>7
^{133}I	<1(-1)	>15
^{135}I	d	>4
^{24}Na	c	<8(-1)
^{51}Cr	>3	2.4 ± 0.8 (1)
^{54}Mn	c	<7(-1)
^{56}Mn	d	d
^{59}Fe	d	d
^{58}Co	c	c
^{60}Co	c	c
^{110m}Ag	c	c
^{139}Ba	d	c
^{140}Ba	c	d

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-36
DF'S FOR UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date: 5-7-82 Time: 1010	Date: 5/31/82 Time: 1123
^{131}I	c	>2
^{132}I	c	>3
^{133}I	5 ± 2 (-1)	8 ± 2
^{135}I	<9(-1)	>6
^{24}Na	c	1.1 ± 0.5
^{51}Cr	<3(-1)	>44
^{54}Mn	c	<9(-1)
^{56}Mn	c	d
^{59}Fe	d	d
^{58}Co	c	<1
^{60}Co	c	c
^{110m}Ag	c	<2
^{139}Ba	c	c
^{140}Ba	c	d

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-37a
DF'S FOR FILTERED FRACTION IN UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time: 9-28-82 0930	Date and Time: 10-10-82 0130
^{51}Cr	>2.1	>5.0(1)
^{54}Mn	4 ± 1 (1)	1.3 ± 0.5(3)
^{59}Fe	>6.3	>3.9(2)
^{58}Co	>5.5	>1.5(2)
^{60}Co	1.9 ± 0.5(1)	>5.8(2)
^{65}Zn	d	>2.5(1)
^{110m}Ag	d	<1.2(1)
^{124}Sb	d	>2.6

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-37b
DF'S FOR FILTERED FRACTION IN UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time: 9-28-82 0930	Date and Time: 10-10-82 0103
^{51}Cr	d	>1.0
^{54}Mn	4.0 ± 0.3 (-1)	6.8 ± 0.5
^{59}Fe	d	>9.0
^{58}Co	6.0 ± 0.5 (-1)	1.9 ± 0.2
^{60}Co	d	4.5 ± 0.4
^{110m}Ag	d	>3(-1)
^{124}Sb	d	>3(-1)

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-38
PERCENT FILTERED FRACTION IN UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER INLET

Nuclide	Date and Time 6-7-82 1116	7-1-82 0845	9-28-82 0930	10-10-82 0100
^{134}Cs	*	6.9	a	*
^{137}Cs	*	12.2	a	*
^{24}Na	0	0	a	*
^{51}Cr	90.2 [b]	93.2 [b]	a	83 [b]
^{54}Mn	57.5 [b]	75.9	54	80 [b]
^{59}Fe	89.2 [b]	a	a	81 [b]
^{58}Co	50.6 [b]	a	16	75 [b]
^{60}Co	68.1 [b]	52.0 [b]	a	70 [b]
^{110m}Ag	*	50.0	a	*
^{125}Sb	0	0	a	68

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-39
PERCENT FILTERED FRACTION IN UNIT NO. 1 CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/milliliter)

Nuclide	Date and Time 6-8-82 1121	9-28-82 0930	10-10-82 0103
^{24}Na	0.5	0	0
^{51}Cr	a	0	0
^{54}Mn	2.3 [b]	1.2 [b]	1.7
^{59}Fe	a	*	*
^{58}Co	2.9 [b]	<2.2	3.8 [b]
^{60}Co	0 [b]	*	<1.8 [b]
^{110m}Ag	12.5	0	0

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-40
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time					
	3-15-82 0828	3-23-82 1135	3-25-82 1015	3-26-82 0757	3-28-82 1505	4-3-82 1156
^{84}Br	*	1.3 ± 0.2 (-4)	<3(-4)	<7(-5)	4 ± 1 (-5)	2.1 ± 0.4 (-4)
^{131}I	1.82 ± 0.01(-4)	4.54 ± 0.04(-5)	4.06 ± 0.05(-5)	3.93 ± 0.03(-5)	1.90 ± 0.03(-5)	4.38 ± 0.03(-5)
^{132}I	5.4 ± 0.1 (-4)	6.70 ± 0.07(-4)	7.89 ± 0.06(-4)	1.54 ± 0.04(-4)	7.0 ± 0.2 (-5)	6.61 ± 0.07(-4)
^{133}I	3.10 ± 0.05(-4)	4.57 ± 0.05(-4)	4.64 ± 0.06(-4)	1.90 ± 0.03(-4)	1.02 ± 0.03(-4)	4.73 ± 0.07(-4)
^{134}I	1.7 ± 0.2 (-3)	1.92 ± 0.02(-3)	2.17 ± 0.02(-3)	2.9 ± 0.1 (-4)	1.12 ± 0.02(-4)	1.75 ± 0.01(-3)
^{135}I	6.0 ± 0.3 (-4)	9.35 ± 0.08(-4)	1.03 ± 0.01(-3)	2.93 ± 0.09(-4)	<2(-4)	1.00 ± 0.01(-3)
^{88}Rb	*	<8(-5)	<3(-4)	<2(-4)	<4(-5)	8 ± 2 (-4)
^{89}Rb	*	9.4 ± 0.4 (-4)	7.8 ± 0.7 (-4)	5.3 ± 0.4 (-4)	3.9 ± 0.1 (-4)	<3(-3)
^{134}Cs	1.07 ± 0.01(-4)	<7(-7)	7.7 ± 0.9 (-7)	6.17 + 0.08(-6)	2.10 ± 0.07(-6)	5.0 ± 0.4 (-7)
^{136}Cs	3.18 ± 0.04(-5)	<2(-6)	1.51 ± 0.09(-6)	2.05 ± 0.09(-6)	7.9 ± 0.7 (-7)	7.2 ± 0.9 (-7)
^{137}Cs	1.14 ± 0.01(-4)	6 ± 2 (-7)	1.2 ± 0.1 (-6)	6.9 ± 0.1 (-6)	2.40 ± 0.08(-6)	7.4 ± 0.7 (-7)
^{138}Cs	*	6.2 ± 0.4 (-4)	7.6 ± 0.2 (-4)	4.4 ± 0.1 (-4)	3.46 ± 0.07(-4)	7.2 ± 0.2 (-4)
^{139}Cs	*	5.1 ± 0.7 (-3)	<2(-2)	2.0 ± 0.9 (-3)	1.0 ± 0.1 (-3)	*
^{24}Na	1.26 ± 0.03(-4)	3.39 ± 0.03(-4)	7.4 ± 0.1 (-4)	3.13 ± 0.05(-4)	1.64 ± 0.05(-4)	2.78 ± 0.04(-4)
^{51}Cr	7.1 ± 0.2 (-5)	4.2 ± 0.3 (-5)	2.9 ± 0.2 (-5)	<2(-6)	1.8 ± 0.4 (-6)	5.8 ± 0.1 (-5)
^{54}Mn	5.4 ± 0.3 (-6)	7 ± 2 (-7)	1.75 ± 0.09(-6)	1.19 ± 0.06(-6)	4.7 ± 0.5 (-7)	7.5 ± 0.7 (-7)
^{59}Fe	4.5 ± 0.3 (-6)	<8(-7)	<5(-7)	<3(-7)	<2(-7)	4.7 ± 0.9 (-7)
^{58}Co	2.9 ± 0.2 (-6)	1.0 ± 0.2 (-6)	2.1 ± 0.3 (-6)	1.8 ± 0.1 (-6)	7.6 ± 0.6 (-7)	1.1 ± 0.1 (-6)

Table B.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time					
	3-15-82 0828	3-23-82 1135	3-25-82 1015	3-26-82 0757	3-28-82 1505	4-3-82 1156
^{60}Co	6.3 ± 0.3 (-6)	2.5 ± 0.2 (-6)	4.4 ± 0.1 (-6)	4.16 ± 0.09(-6)	1.60 ± 0.07(-6)	1.9 ± 0.1 (-6)
^{65}Zn	1.4 ± 0.5 (-6)	<2(-6)	1.4 ± 0.2 (-6)	7.4 ± 1.1 (-7)	5 ± 1 (-7)	5 ± 1 (-7)
^{91}Sr	1.72 ± 0.05(-4)	1.77 ± 0.07(-4)	2.42 ± 0.06(-4)	2.2 ± 0.7 (-5)	1.4 ± 0.2 (-5)	1.71 ± 0.08(-4)
^{91m}Y	<1(-3)	1.0 ± 0.4 (-6)	4 ± 1 (-5)	<2(-5)	<4(-6)	<3(-5)
^{95}Nb	<7(-7)	<3(-7)	<2(-7)	<2(-7)	<2(-7)	1.7 ± 0.2 (-5)
^{99}Mo	2.3 ± 0.2 (-5)	9 ± 2 (-6)	8 ± 2 (-6)	<5(-6)	<2(-6)	1.4 ± 0.1 (-5)
^{110m}Ag	<7(-7)	<6(-7)	<3(-7)	2.8 ± 0.8 (-7)	2.1 ± 0.4 (-7)	<2(-7)
^{132}Te	<2(-6)	<6(-7)	<7(-7)	4 ± 2 (-6)	<5(-7)	4 ± 2 (-6)
^{139}Ba	1.7 ± 0.1 (-3)	1.56 ± 0.01(-3)	1.87 ± 0.02(-3)	3.2 ± 0.1 (-4)	2.21 ± 0.09(-4)	1.57 ± 0.01(-3)
^{140}Ba	2.8 ± 0.1 (-5)	1.5 ± 0.1 (-5)	2.90 ± 0.07(-5)	7.4 ± 0.3 (-6)	4.1 ± 0.3 (-6)	1.34 ± 0.05(-5)
^{140}La	<1(-6)	<6(-7)	<2(-6)	<2(-6)	2.3 ± 0.7 (-6)	<3(-6)
^{141}Ce	<1(-6)	<1(-6)	4 ± 2 (-7)	5.0 ± 2.3 (-7)	<3(-7)	<4(-7)
^{239}Np	7.7 ± 0.1 (-5)	5.53 ± 0.09(-5)	1.09 ± 0.01(-4)	1.11 ± 0.01(-4)	9.8 ± 0.2 (-5)	5.08 ± 0.08(-5)

* Radionuclide not measured.

Table B.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time 4-6-82 0940	4-8-82 0904	4-11-82 0920	4-13-82 1011	4-20-82 1200	4-29-82 0850
^{84}Br	<6(-4)	1.4 ± 0.2 (-4)	*	1.7 ± 0.1 (-4)	1.0 ± 0.2 (-4)	<5(-6)
^{131}I	3.9 ± 0.1 (-5)	3.61 ± 0.03(-5)	3.74 ± 0.06(-5)	3.92 ± 0.04(-5)	4.2 ± 0.1 (-5)	4.44 ± 0.09(-5)
^{132}I	7.39 ± 0.08(-4)	6.67 ± 0.07(-4)	6.2 ± 0.1 (-4)	6.12 ± 0.04(-4)	6.58 ± 0.07(-4)	5.6 ± 0.1 (-5)
^{133}I	4.13 ± 0.05(-4)	4.2 ± 0.1 (-4)	4.16 ± 0.06(-4)	4.25 ± 0.05(-4)	4.57 ± 0.07(-4)	<3(-6)
^{134}I	2.0 ± 0.1 (-3)	1.77 ± 0.02(-3)	1.7 ± 0.1 (-3)	1.59 ± 0.01(-3)	1.64 ± 0.02(-3)	<3(-6)
^{135}I	8.7 ± 0.2 (-4)	9.2 ± 0.1 (-4)	8.1 ± 0.2 (-4)	8.6 ± 0.2 (-4)	8.9 ± 0.1 (-4)	<3(-6)
^{88}Rb	*	<8(-5)	*	<9(-5)	<3(-4)	<6(-6)
^{89}Rb	*	1.12 ± 0.02(-3)	*	8.7 ± 0.2 (-4)	6.3 ± 0.9 (-4)	<8(-6)
^{134}Cs	4.6 ± 0.4 (-7)	4.4 ± 0.5 (-7)	6 ± 3 (-7)	3.9 + 0.2 (-7)	<1(-6)	1.29 ± 0.01(-4)
^{136}Cs	7.0 ± 0.7 (-7)	7.0 ± 0.6 (-7)	<1(-6)	8.1 ± 0.3 (-7)	<2(-6)	2.65 ± 0.06(-5)
^{137}Cs	5.3 ± 0.8 (-7)	6.9 ± 0.8 (-7)	8 ± 1 (-7)	5.7 ± 0.4 (-7)	<8(-7)	1.43 ± 0.02(-4)
^{138}Cs	6.8 ± 0.5 (-4)	7.7 ± 0.1 (-4)	*	6.3 ± 0.1 (-4)	5.8 ± 0.2 (-4)	<6(-7)
^{139}Cs	*	6 ± 1 (-3)	*	5.8 ± 0.5 (-3)	<2(-2)	<3(-5)
^{24}Na	2.52 ± 0.03(-4)	2.61 ± 0.05(-4)	2.12 ± 0.08(-4)	2.44 ± 0.06(-4)	2.7 ± 0.4 (-4)	<2(-7)
^{51}Cr	6.1 ± 0.2 (-5)	6.8 ± 0.2 (-5)	6.4 ± 0.2 (-5)	6.06 ± 0.08(-5)	4.8 ± 0.3 (-5)	<8(-6)
^{54}Mn	8.1 ± 0.6 (-7)	3.6 ± 0.5 (-7)	6 ± 1 (-7)	4.1 ± 0.3 (-7)	<5(-7)	1.15 ± 0.01(-4)
^{59}Fe	3.8 ± 0.9 (-7)	<3(-7)	<5(-7)	1.6 ± 0.4 (-7)	<8(-6)	<8(-7)
^{58}Co	1.3 ± 0.1 (-6)	7.3 ± 0.6 (-7)	9 ± 1 (-7)	7.2 ± 0.4 (-7)	<3(-5)	8.3 ± 0.1 (-5)

Table B.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time					
	4-6-82 0940	4-8-82 0904	4-11-82 0920	4-13-82 1011	4-20-82 1200	4-29-82 0850
^{60}Co	2.31 ± 0.08(-6)	1.78 ± 0.08(-6)	1.6 ± 0.2 (-6)	1.42 ± 0.05(-6)	<4(-6)	2.50 ± 0.03(-4)
^{65}Zn	7.2 ± 1.1 (-7)	6 ± 1 (-7)	7 ± 2 (-7)	4.8 ± 0.8 (-7)	<2(-6)	1.75 ± 0.08(-5)
^{91}Sr	2.10 ± 0.04(-4)	1.85 ± 0.07(-4)	1.78 ± 0.08(-4)	1.7 ± 0.1 (-5)	1.92 ± 0.09(-4)	<7(-6)
^{91m}Y	<4(-5)	<2(-5)	<8(-4)	1.1 ± 0.4 (-5)	<2(-5)	<2(-6)
^{95}Nb	<2(-7)	<1(-7)	<2(-7)	<4(-8)	<5(-7)	<8(-7)
^{99}Mo	1.9 ± 0.2 (-5)	1.9 ± 0.2 (-5)	2.5 ± 0.2 (-5)	2.05 ± 0.07(-5)	1.1 ± 0.2 (-5)	<2(-5)
^{110m}Ag	<3(-7)	<3(-7)	<5(-7)	<2(-7)	<7(-7)	<1(-6)
^{132}Te	<5(-7)	<6(-7)	<2(-6)	5 ± 2 (-6)	<2(-6)	1.5 ± 0.7 (-6)
^{139}Ba	1.87 ± 0.02(-3)	1.66 ± 0.01(-3)	1.64 ± 0.05(-3)	1.57 ± 0.01(-3)	1.56 ± 0.02(-3)	<4(-6)
^{140}Ba	1.81 ± 0.04(-5)	1.54 ± 0.04(-5)	1.81 ± 0.08(-5)	1.65 ± 0.02(-5)	2.2 ± 0.2 (-5)	8 ± 2 (-6)
^{140}La	<3(-7)	<2(-6)	<7(-7)	4 ± 1 (-6)	<4(-6)	<9(-7)
^{141}Ce	7 ± 1 (-7)	3 ± 1 (-7)	<5(-7)	3.0 ± 0.4 (-7)	<2(-6)	<9(-7)
^{239}Np	6.2 ± 0.3 (-5)	5.2 ± 0.1 (-5)	5.0 ± 0.2 (-5)	4.83 ± 0.06(-5)	5.9 ± 0.1 (-5)	3.2 ± 0.2 (-5)

* Radionuclide not measured.

Table B.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 1305	7-27-82 1048	9-27-82 1030	9-29-82 1110	10-14-82 1225	10-19-82 1447
^{84}Br	<2(-4)	<3(-6)	<7(-6)	*	*	1.5 ± 0.6 (-5)
^{131}I	7.6 ± 0.1 (-5)	<9(-8)	<3(-7)	<2(-7)	4.6 ± 0.3 (-6)	1.7 ± 0.1 (-5)
^{132}I	1.71 ± 0.02(-4)	<2(-7)	<5(-7)	<3(-6)	*	<2(-4)
^{133}I	1.7 ± 0.3 (-6)	<1(-7)	<3(-7)	<2(-7)	8.1 ± 0.2 (-5)	2.10 ± 0.04(-4)
^{134}I	<2(-5)	<4(-7)	<2(-6)	<2(-4)	*	9.32 ± 0.07(-4)
^{135}I	<2(-6)	<2(-7)	<6(-7)	<1(-6)	1.6 ± 0.1 (-4)	4.42 ± 0.04(-4)
^{88}Rb	*	<2(-5)	<4(-5)	*	*	<3(-5)
^{89}Rb	*	<3(-5)	<8(-5)	*	*	4.3 ± 0.1 (-4)
^{134}Cs	9.1 ± 0.1 (-5)	8.7 ± 2.8 (-8)	3.8 ± 0.8 (-7)	<2(-7)	<3(-7)	<2(-7)
^{136}Cs	1.81 ± 0.03(-5)	<9(-8)	<4(-7)	<2(-7)	<4(-7)	<2(-7)
^{137}Cs	1.00 ± 0.02(-4)	<9(-8)	<4(-7)	<6(-7)	<4(-7)	<3(-7)
^{138}Cs	<4(-5)	<2(-6)	<2(-6)	*	*	2.04 ± 0.04(-4)
^{139}Cs	*	*	*	*	*	2.6 ± 0.1 (-3)
^{24}Na	<2(-7)	<5(-8)	<9(-8)	<7(-8)	6.9 ± 0.7 (-6)	1.34 ± 0.06(-5)
^{51}Cr	9.7 ± 0.2 (-5)	1.97 ± 0.05(-5)	<2(-6)	<2(-6)	<6(-6)	5.3 ± 0.8 (-6)
^{54}Mn	9.3 ± 0.2 (-5)	3.1 ± 0.1 (-6)	6.4 ± 0.3 (-6)	8.5 ± 0.3 (-6)	2.8 ± 0.4 (-6)	3.2 ± 0.1 (-6)
^{59}Fe	7.6 ± 0.4 (-6)	6.5 ± 0.6 (-7)	<5(-7)	4 ± 1 (-7)	<3(-7)	<3(-6)
^{58}Co	4.89 ± 0.05(-5)	3.6 ± 0.4 (-7)	3.1 ± 0.1 (-6)	1.7 ± 0.2 (-6)	<4(-7)	5.2 ± 0.7 (-7)

Table B.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET (continued)
(microcuries/gram)

Nuclide	Date and Time 4-29-82 1305	7-27-82 1048	9-27-82 1030	9-29-82 1110	10-14-82 1225	10-19-82 1447
^{60}Co	1.72 ± 0.03(-4)	4.6 ± 0.1 (-6)	5.19 ± 0.09(-5)	3.6 ± 0.1 (-5)	2.4 ± 0.3 (-6)	5.2 ± 0.1 (-6)
^{65}Zn	1.47 ± 0.04(-5)	1.9 ± 0.7 (-7)	1.5 ± 0.3 (-6)	1.6 ± 0.4 (-6)	<9(-7)	5 ± 1 (-7)
^{91}Sr	<3(-6)	<4(-7)	<7(-7)	<2(-6)	8.5 ± 0.5 (-5)	9.6 ± 0.3 (-5)
^{91m}Y	<2(-5)	3.7 ± 1.7 (-7)	<2(-6)	<3(-4)	*	<8(-6)
^{95}Nb	6 ± 3 (-7)	<2(-7)	<2(-7)	<2(-7)	<3(-7)	<1(-7)
^{99}Mo	<6(-6)	<5(-7)	<2(-6)	<2(-6)	<6(-6)	6.6 ± 0.6 (-5)
^{110m}Ag	<6(-7)	*	<3(-7)	<2(-7)	<8(-7)	<4(-7)
^{129}Te	*	<4(-6)	<9(-6)	<3(-4)	*	1.6 ± 0.4 (-4)
^{132}Te	<5(-7)	<5(-8)	<2(-7)	<1(-7)	<5(-7)	<4(-7)
^{139}Ba	<1(-5)	<7(-7)	<2(-6)	<6(-5)	*	8.6 ± 0.1 (-4)
^{140}Ba	4 ± 1 (-6)	<3(-7)	<8(-7)	<8(-7)	6.5 ± 0.7 (-6)	5.5 ± 0.3 (-6)
^{140}La	9 ± 2 (-7)	<6(-8)	<5(-8)	<8(-8)	*	<2(-6)
^{141}Ce	<2(-6)	<2(-7)	<2(-7)	<2(-7)	<6(-7)	<3(-7)
^{239}Np	2.19 ± 0.08(-5)	<3(-7)	<5(-7)	<4(-7)	1.71 ± 0.08(-5)	5.9 ± 0.8 (-6)

* Radionuclide not measured.

Table B.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time 10-20-82 1212	10-20-82 1218
^{84}Br	7 ± 1 (-5)	<8(-6)
^{131}I	1.64 ± 0.07(-5)	<6(-7)
^{132}I	1.86 ± 0.03(-4)	7 ± 2 (-7)
^{133}I	2.25 ± 0.09(-4)	1.2 ± 0.2 (-6)
^{134}I	8.74 ± 0.06(-4)	3.1 ± 0.8 (-6)
^{135}I	4.81 ± 0.03(-4)	1.6 ± 0.5 (-6)
^{88}Rb	<7(-5)	<9(-5)
^{89}Rb	4.9 ± 0.4 (-4)	<4(-5)
^{134}Cs	<1(-6)	<4(-7)
^{136}Cs	<2(-6)	<3(-7)
^{137}Cs	<3(-6)	<3(-7)
^{138}Cs	2.03 ± 0.05(-4)	<4(-6)
^{139}Cs	*	<3(-3)
^{24}Na	3 ± 1 (-7)	8.6 ± 0.1 (-5)
^{51}Cr	<2(-5)	<8(-6)
^{54}Mn	1.6 ± 0.4 (-6)	1.6 ± 0.2 (-6)
^{59}Fe	<5(-6)	<5(-7)
^{58}Co	<3(-6)	<4(-7)

Table 8.3-40 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date and Time 10-20-82 1212	10-20-82 1218
^{60}Co	1.5 ± 0.2 (-6)	<8(-7)
^{65}Zn	<1(-5)	<2(-6)
^{91}Sr	8.9 ± 0.2 (-5)	<2(-6)
^{91m}Y	<5(-6)	<2(-6)
^{95}Nb	<9(-6)	<3(-7)
^{99}Mo	2.2 ± 0.2 (-5)	<2(-6)
^{110m}Ag	<2(-6)	<5(-7)
^{129}Te	<2(-4)	*
^{132}Te	<1(-6)	<5(-7)
^{139}Ba	8.81 ± 0.04(-4)	<8(-6)
^{140}Ba	5 ± 1 (-6)	<9(-7)
^{140}La	<5(-7)	<3(-7)
^{141}Ce	<2(-6)	<9(-7)
^{239}Np	<3(-6)	<2(-6)

* Radionuclide not measured.

Table B.3-41
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-23-82
Time: 1135

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<2(-3)	a, *	1.3 ± 0.2 (-4)
^{131}I	1.9 ± 0.2 (-7)	4.6 ± 0.1 (-5)	4.7 ± 0.1 (-5)	4.54 ± 0.04(-5)
^{132}I	*	6.85 ± 0.09(-4)	a, *	6.70 ± 0.07(-4)
^{133}I	5.6 ± 0.5 (-7)	4.59 ± 0.08(-4)	4.60 ± 0.08(-4)	4.57 ± 0.05(-4)
^{134}I	*	1.99 ± 0.04(-3)	a, *	1.92 ± 0.02(-3)
^{135}I	<3(-6)	9.53 ± 0.09(-4)	9.53 ± 0.09(-4)	9.35 ± 0.08(-4)
^{134}Cs	*	*	*	*
^{137}Cs	<3(-8)	<7(-6)	a	6 ± 2 (-7)
^{24}Na	1.7 ± 0.2 (-6)	3.28 ± 0.07(-4)	3.30 ± 0.07(-4)	3.39 ± 0.03(-4)
^{51}Cr	2.59 ± 0.09(-5)	1.5 ± 0.4 (-5)	4.1 ± 0.4 (-5)	4.2 ± 0.3 (-5)
^{54}Mn	2.2 ± 0.3 (-7)	<2(-6)	a	7 ± 2 (-7)
^{59}Fe	2.4 ± 0.3 (-7)	<3(-6)	a	<8(-7)
^{58}Co	6 ± 1 (-8)	6 ± 2 (-6)	6 ± 2 (-6)[b]	1.0 ± 0.2 (-6)
^{60}Co	1.9 ± 0.2 (-7)	1.7 ± 0.5 (-6)	1.8 ± 0.5 (-6)	2.5 ± 0.2 (-6)
^{91}Sr	1.3 ± 0.2 (-6)	1.17 ± 0.03(-4)	1.18 ± 0.03(-4)[b]	1.77 ± 0.07(-4)
^{99}Mo	<4(-7)	1.5 ± 0.4 (-5)	1.5 ± 0.4 (-5)[b]	9 ± 2 (-6)
^{132}Te	*	*	*	*
^{139}Ba	*	1.26 ± 0.02(-3)	a, *	1.56 ± 0.01(-3)

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 3-23-82 Time: 1135			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	1.9 ± 0.4 (-7)	1.0 ± 0.2 (-5)	1.0 ± 0.2 (-5)[b]	1.5 ± 0.1 (-5)
^{239}Np	2.3 ± 0.6 (-7)	6.1 ± 0.2 (-5)	6.1 ± 0.2 (-5)	5.53 ± 0.09(-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1156

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<1(-4)	<2(-3)	a	2.1 ± 0.4 (-4)
^{131}I	2.3 ± 0.2 (-7)	4.19 ± 0.07(-5)	4.21 ± 0.07(-5)	4.38 ± 0.03(-5)
^{132}I	4 ± 1 (-7)	6.87 ± 0.06(-4)	6.87 ± 0.06(-4)	6.61 ± 0.07(-4)
^{133}I	1.14 ± 0.07(-6)	4.5 ± 0.2 (-4)	4.5 ± 0.2 (-4)	4.73 ± 0.07(-4)
^{134}I	<8(-6)	1.84 ± 0.03(-3)	1.84 ± 0.03(-3)	1.75 ± 0.01(-3)
^{135}I	1.5 ± 0.1 (-6)	9.98 ± 0.09(-4)	9.99 ± 0.09(-4)	1.00 ± 0.01(-3)
^{134}Cs	5 ± 2 (-8)	3.3 ± 0.6 (-7)	3.9 ± 0.6 (-7)	5.0 ± 0.5 (-7)
^{137}Cs	8 ± 3 (-8)	6 ± 1 (-7)	7 ± 1 (-7)	7.4 ± 0.8 (-7)
^{24}Na	4.1 ± 0.1 (-6)	2.74 ± 0.06(-4)	2.78 ± 0.06(-4)	2.78 ± 0.04(-4)
^{51}Cr	4.8 ± 0.1 (-5)	2.7 ± 0.1 (-5)	7.6 ± 0.2 (-5)	5.8 ± 0.1 (-5)
^{54}Mn	8.2 ± 0.4 (-7)	1.5 ± 0.7 (-7)	9.6 ± 0.8 (-7)	7.5 ± 0.8 (-7)
^{59}Fe	9.1 ± 0.6 (-7)	<3(-7)	a	4.7 ± 0.9 (-7)
^{58}Co	1.9 ± 0.4 (-7)	3.1 ± 0.8 (-7)	4.9 ± 0.9 (-7)[b]	1.1 ± 0.1 (-6)
^{60}Co	5.2 ± 0.3 (-7)	4 ± 1 (-7)	9 ± 1 (-7)[b]	1.9 ± 0.1 (-6)
^{91}Sr	3.8 ± 0.2 (-6)	6.3 ± 0.3 (-5)	6.6 ± 0.3 (-5)[b]	1.71 ± 0.08(-4)
^{99}Mo	8 ± 1 (-7)	1.3 ± 0.2 (-5)	1.4 ± 0.2 (-5)	1.4 ± 0.1 (-5)
^{132}Te	8 ± 2 (-8)	<5(-7)	a	4 ± 2 (-6)
^{139}Ba	5.0 ± 0.1 (-5)	4.0 ± 0.2 (-4)	4.5 ± 0.2 (-4)[b]	1.57 ± 0.01(-3)

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 4-3-82 Time: 1156			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	4.8 ± 0.8 (-7)	3.1 ± 0.3 (-6)	3.6 ± 0.3 (-6)[b]	1.34 ± 0.05(-5)
^{239}Np	5.5 ± 0.7 (-7)	4.7 ± 0.1 (-5)	4.7 ± 0.1 (-5)	5.08 ± 0.08(-5)

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0902

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	2.4 ± 0.5 (-4)	a, *	1.4 ± 0.2 (-4)
^{131}I	1.7 ± 0.3 (-7)	4.24 ± 0.03(-5)	4.26 ± 0.03(-5)[b]	3.61 ± 0.03(-5)
^{132}I	7 ± 1 (-7)	6.72 ± 0.05(-4)	6.73 ± 0.05(-4)	6.67 ± 0.07(-4)
^{133}I	9.1 ± 0.6 (-7)	4.49 ± 0.05(-4)	4.50 ± 0.05(-4)	4.2 ± 0.1 (-4)
^{134}I	<2(-5)	1.80 ± 0.02(-3)	1.80 ± 0.02(-3)	1.77 ± 0.02(-3)
^{135}I	1.2 ± 0.2 (-6)	9.32 ± 0.07(-4)	9.33 ± 0.07(-4)	9.2 ± 0.1 (-4)
^{134}Cs	<7(-8)	3.7 ± 0.6 (-7)	a	4.5 ± 0.5 (-7)
^{137}Cs	8 ± 3 (-8)	5 ± 1 (-7)	6 ± 1 (-7)	6.9 ± 0.8 (-7)
^{24}Na	2.6 ± 0.1 (-6)	2.68 ± 0.06(-4)	2.71 ± 0.06(-4)	2.61 ± 0.05(-4)
^{51}Cr	4.11 ± 0.09(-5)	4.1 ± 0.1 (-5)	8.2 ± 0.1 (-5)[b]	6.8 ± 0.2 (-5)
^{54}Mn	2.1 ± 0.6 (-7)	2.4 ± 0.6 (-7)	4.4 ± 0.9 (-7)	3.5 ± 0.5 (-7)
^{59}Fe	<2(-7)	3 ± 1 (-7)	a	<3(-7)
^{58}Co	7 ± 2 (-8)	3 ± 2 (-7)	4 ± 2 (-7)[b]	7.3 ± 0.6 (-7)
^{60}Co	2.1 ± 0.4 (-7)	8.0 ± 0.8 (-7)	1.00 ± 0.09(-6)[b]	1.78 ± 0.08(-6)
^{91}Sr	2.5 ± 0.2 (-6)	8.3 ± 0.5 (-5)	8.50 ± 0.05(-5)[b]	1.85 ± 0.07(-4)
^{99}Mo	9 ± 2 (-7)	2.2 ± 0.2 (-5)	2.3 ± 0.2 (-5)	1.9 ± 0.2 (-5)
^{132}Te	<4(-8)	2 ± 1 (-6)	2 ± 1 (-6)[b]	<6(-7)
^{139}Ba	5.9 ± 0.2 (-5)	8.5 ± 0.1 (-4)	9.1 ± 0.1 (-4)[b]	1.66 ± 0.01(-3)

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0902

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	6.7 ± 0.9 (-7)	7.4 ± 0.4 (-6)	8.1 ± 0.4 (-6)[b]	1.54 ± 0.04(-5)
^{239}Np	4.4 ± 0.8 (-7)	5.0 ± 0.1 (-5)	5.1 ± 0.1 (-5)	5.2 ± 0.1 (-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 1110

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	a, *	*
^{131}I	<3(-8)	<3(-7)	a	<2(-7)
^{132}I	*	*	*	<3(-6)
^{133}I	<2(-5)	<2(-5)	a	<2(-7)
^{134}I	*	*	*	<2(-4)
^{135}I	*	*	*	<1(-6)
^{134}Cs	<3(-8)	<2(-7)	a	<2(-7)
^{137}Cs	<6(-8)	<3(-7)	a, *	<6(-7)
^{24}Na	*	<2(-5)	a, *	<7(-8)
^{51}Cr	2.0 ± 0.7 (-7)	<2(-6)	a	<2(-6)
^{54}Mn	6.5 ± 0.1 (-6)	2.8 ± 0.2 (-6)	9.3 ± 0.2 (-6)	8.5 ± 0.3 (-6)
^{59}Fe	3.8 ± 0.4 (-7)	<4(-7)	a	4 ± 1 (-7)
^{58}Co	4.0 ± 0.2 (-7)	1.0 ± 0.2 (-6)	1.4 ± 0.2 (-6)	1.7 ± 0.2 (-6)
^{60}Co	9.2 ± 0.1 (-6)	1.66 ± 0.04(-5)	2.58 ± 0.04(-5)[b]	3.6 ± 0.1 (-5)
^{65}Zn	2.1 ± 0.4 (-7)	8 ± 2 (-7)	1.0 ± 0.2 (-6)	1.6 ± 0.4 (-6)
^{91}Sr	*	*	*	<2(-6)
^{95}Zr	<2(-7)	<4(-7)	a	<3(-7)
^{95}Nb	5 ± 2 (-8)	2.2 ± 0.9 (-7)	2.7 ± 0.9 (-7)	<2(-7)

Table B.3-41 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 1110

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{99}Mo	<1(-6)	<8(-6)	a	<2(-6)
^{132}Te	<8(-8)	<8(-7)	a	<1(-7)
^{139}Ba	*	*	*	<6(-5)
^{140}Ba	<2(-7)	<8(-7)	a	<8(-7)
^{239}Np	<7(-7)	<4(-6)	a	<4(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-42
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0825	3-20-82 1027	3-21-82 0930	3-25-82 1002	3-28-82 1452	4-3-82 1224
^{84}Br	*	<2(-5)	<3(-5)	1.8 ± 0.3 (-4)	3 ± 1 (-5)	<3(-5)
^{131}I	2.85 ± 0.02(-4)	4.03 ± 0.03(-5)	4.21 ± 0.03(-5)	5.0 ± 0.2 (-5)	2.32 ± 0.02(-5)	6.7 ± 0.1 (-6)
^{132}I	4.7 ± 0.5 (-5)	7.26 ± 0.07(-5)	1.60 ± 0.02(-4)	8.35 ± 0.06(-4)	1.38 ± 0.03(-4)	3.7 ± 0.1 (-5)
^{133}I	1.14 ± 0.02(-4)	1.19 ± 0.01(-4)	1.82 ± 0.03(-4)	4.9 ± 0.3 (-4)	1.51 ± 0.03(-4)	4.4 ± 0.1 (-5)
^{134}I	*	1.24 ± 0.01(-4)	1.89 ± 0.03(-4)	2.35 ± 0.02(-3)	2.88 ± 0.03(-4)	8.6 ± 0.3 (-5)
^{135}I	8.1 ± 0.3 (-5)	1.62 ± 0.02(-4)	2.45 ± 0.04(-4)	1.01 ± 0.01(-3)	2.37 ± 0.04(-4)	7.3 ± 0.2 (-5)
^{88}Rb	*	1.7 ± 0.8 (-5)	<1(-4)	<4(-4)	<1(-4)	<7(-4)
^{89}Rb	*	2.4 ± 0.3 (-4)	3.5 ± 0.2 (-4)	1.23 ± 0.06(-3)	3.4 ± 0.1 (-4)	<5(-4)
^{134}Cs	6.14 ± 0.04(-5)	1.50 ± 0.02(-5)	1.02 ± 0.02(-5)	<5(-6)	1.99 ± 0.06(-6)	4.2 ± 0.4 (-7)
^{136}Cs	1.92 ± 0.02(-5)	4.3 ± 0.2 (-6)	2.8 ± 0.1 (-6)	<6(-6)	8.1 ± 0.8 (-7)	3.9 ± 0.8 (-7)
^{137}Cs	6.80 ± 0.08(-5)	1.57 ± 0.02(-5)	1.15 ± 0.02(-5)	<2(-5)	2.18 ± 0.08(-6)	6.9 ± 0.7 (-7)
^{138}Cs	*	2.15 ± 0.02(-4)	3.40 ± 0.07(-4)	8.3 ± 0.1 (-4)	3.45 ± 0.09(-4)	1.6 ± 0.1 (-4)
^{139}Cs	*	8.6 ± 0.6 (-4)	<3(-3)	<2(-2)	1.0 ± 0.2 (-3)	*
^{24}Na	5.8 ± 0.1 (-5)	2.87 ± 0.03(-4)	2.1 ± 0.4 (-4)	8.2 ± 0.1 (-4)	2.51 ± 0.03(-4)	1.03 ± 0.01(-4)
^{51}Cr	1.6 ± 0.7 (-6)	<4(-6)	1.5 ± 0.6 (-6)	8 ± 1 (-5)	2.4 ± 0.5 (-6)	1.4 ± 0.4 (-6)
^{54}Mn	3.6 ± 0.9 (-7)	1.0 ± 0.1 (-6)	6.4 ± 0.8 (-7)	<7(-6)	5.2 ± 0.5 (-7)	<2(-7)
^{59}Fe	<3(-7)	<2(-6)	<2(-7)	<6(-6)	<3(-7)	1.4 ± 0.6 (-6)
^{58}Co	7 ± 1 (-7)	1.1 ± 0.1 (-6)	9.3 ± 0.8 (-7)	1.6 ± 0.5 (-5)	1.24 ± 0.07(-6)	2.2 ± 0.6 (-7)

Table B.3-42 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0825	3-20-82 1027	3-21-82 0930	3-25-82 1002	3-28-82 1452	4-3-82 1224
^{60}Co	1.4 ± 0.1 (-6)	2.42 ± 0.02(-6)	2.24 ± 0.08(-6)	3 ± 1 (-6)	2.3 ± 0.1 (-6)	3.1 ± 0.8 (-7)
^{65}Zn	1.0 ± 0.5 (-6)	7 ± 3 (-7)	6 ± 1 (-7)	<2(-5)	8 ± 2 (-7)	<4(-7)
^{91}Sr	<6(-6)	1.3 ± 0.1 (-5)	2.1 ± 0.2 (-5)	2.34 ± 0.06(-4)	3.8 ± 0.3 (-5)	6 ± 1 (-6)
^{91m}Y	*	3 ± 2 (-6)	<8(-6)	2.7 ± 0.9 (-5)	<7(-6)	<9(-6)
^{95}Nb	<2(-7)	<3(-7)	<2(-7)	3.8 ± 0.4 (-5)	<2(-7)	<1(-7)
^{99}Mo	6 ± 1 (-6)	<4(-6)	<4(-6)	<6(-5)	3 ± 1 (-6)	<2(-6)
^{110m}Ag	<3(-7)	1.6 ± 0.8 (-7)	<2(-7)	<8(-6)	1.8 ± 0.5 (-7)	<2(-7)
^{132}Te	<5(-7)	<6(-7)	<1(-6)	<8(-6)	<4(-6)	1.8 ± 0.1 (-6)
^{139}Ba	<6(-4)	1.93 ± 0.09(-4)	2.09 ± 0.07(-4)	1.92 ± 0.02(-3)	3.23 ± 0.04(-4)	8.5 ± 0.4 (-5)
^{140}Ba	2.7 ± 0.4 (-6)	4.1 ± 0.4 (-6)	5.5 ± 0.4 (-6)	<2(-4)	6.9 ± 0.3 (-6)	1.4 ± 0.2 (-6)
^{140}La	<3(-6)			5 ± 1 (-6)	<4(-7)	<3(-7)
^{141}Ce	<5(-7)	<5(-7)	<3(-7)	<5(-6)	5 ± 2 (-7)	<3(-7)
^{239}Np	5.7 ± 0.1 (-5)	5.06 ± 0.06(-5)	1.53 ± 0.02(-4)	1.15 ± 0.08(-4)	1.14 ± 0.01(-4)	1.9 ± 0.1 (-5)

* Radionuclide not measured.

Table B.3-42 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET (continued)
(microcuries/gram)

Nuclide	Date and Time 4-6-82 0937	4-8-82 0855	4-11-82 0919	4-13-82 1006	4-20-82 1155
^{84}Br	<9(-5)	<9(-6)	*	<2(-5)	9 ± 3 (-5)
^{131}I	1.10 ± 0.02(-5)	4.1 ± 0.1 (-6)	4.8 ± 0.1 (-6)	7.3 ± 0.2 (-6)	7 ± 1 (-6)
^{132}I	8.1 ± 0.2 (-5)	2.1 ± 0.1 (-5)	1.92 ± 0.09(-5)	2.63 ± 0.03(-5)	4.2 ± 0.1 (-5)
^{133}I	8.60 ± 0.09(-5)	3.0 ± 0.1 (-5)	2.95 ± 0.05(-5)	4.31 ± 0.06(-5)	6.4 ± 0.1 (-5)
^{134}I	1.77 ± 0.08(-4)	3.6 ± 0.2 (-5)	<7(-5)	4.5 ± 0.1 (-5)	7.5 ± 0.3 (-5)
^{135}I	1.2 ± 0.1 (-4)	4.2 ± 0.2 (-5)	3.8 ± 0.1 (-5)	5.73 ± 0.07(-5)	8.8 ± 0.3 (-5)
^{88}Rb	<6(-3)	<2(-4)	*	<3(-4)	<2(-4)
^{89}Rb	*	<2(-4)	*	4 ± 1 (-4)	1.9 ± 0.6 (-4)
^{134}Cs	6.0 ± 0.5 (-7)	2.0 ± 0.3 (-7)	<3(-7)	2.4 ± 0.2 (-7)	3.9 ± 0.7 (-7)
^{136}Cs	4.6 ± 0.9 (-7)	1.9 ± 0.4 (-7)	<4(-7)	4.1 ± 0.4 (-7)	7 ± 1 (-7)
^{137}Cs	8.4 ± 0.6 (-7)	3.1 ± 0.4 (-7)	4.8 ± 0.7 (-7)	3.9 ± 0.4 (-7)	6 ± 1 (-7)
^{138}Cs	2.3 ± 0.3 (-4)	7.6 ± 0.7 (-5)	*	1.01 ± 0.04(-4)	1.64 ± 0.09(-4)
^{139}Cs	*	*	*	*	<3(-2)
^{24}Na	1.33 ± 0.02(-4)	5.3 ± 0.1 (-5)	5.41 ± 0.09(-5)	7.5 ± 0.2 (-5)	1.57 ± 0.03(-4)
^{51}Cr	2.3 ± 0.5 (-6)	2.4 ± 0.4 (-6)	2.8 ± 0.6 (-6)	3.6 ± 0.3 (-6)	4.3 ± 0.9 (-6)
^{54}Mn	3 ± 1 (-7)	1.4 ± 0.4 (-7)	<2(-7)	<1(-7)	1.9 ± 0.8 (-7)
^{59}Fe	<3(-7)	<2(-7)	<6(-7)	<2(-7)	<3(-7)
^{58}Co	3.9 ± 0.5 (-7)	1.0 ± 0.3 (-7)	2.7 ± 0.9 (-7)	1.1 ± 0.5 (-7)	2.8 ± 0.8 (-7)

Table B.3-42 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET (continued)
(microcuries/gram)

Nuclide	Date and Time 4-6-82 0937	4-8-82 0855	4-11-82 0919	4-13-82 1006	4-20-82 1155
^{60}Co	6 ± 1 (-7)	2.3 ± 0.5 (-7)	<3(-7)	4 ± 1 (-7)	1.1 ± 0.2 (-6)
^{65}Zn	<4(-7)	<3(-7)	<4(-7)	<2(-7)	<6(-7)
^{91}Sr	2.12 ± 0.43(-5)	2.1 ± 0.4 (-5)	4.5 ± 0.6 (-6)	5.2 ± 0.4 (-6)	1.47 ± 0.18(-5)
^{91m}Y	<4(-5)	<5(-6)	<8(-5)	<5(-6)	<8(-6)
^{95}Nb	<2(-7)	<9(-8)	<2(-7)	<8(-8)	<3(-7)
^{99}Mo	<3(-6)	<6(-6)	<2(-6)	1.1 ± 0.5 (-6)	<9(-6)
^{110m}Ag	<3(-7)	<7(-8)	<3(-7)	<1(-7)	<2(-7)
^{132}Te	<4(-7)	<4(-7)	<2(-6)	<3(-7)	<2(-6)
^{139}Ba	1.76 ± 0.09(-4)	5.2 ± 0.4 (-5)	1.1 ± 0.1 (-4)	7.9 ± 0.2 (-5)	1.72 ± 0.05(-4)
^{140}Ba	1.7 ± 0.5 (-6)	4 ± 2 (-7)	<2(-6)	1.0 ± 0.2 (-6)	1.4 ± 0.5 (-6)
^{140}La	<8(-7)	<8(-7)	5 ± 2 (-7)	<3(-7)	<8(-7)
^{141}Ce	<4(-7)	<2(-7)	<4(-7)	<3(-7)	<3(-7)
^{239}Np	3.75 ± 0.07(-5)	1.60 ± 0.09(-5)	1.75 ± 0.05(-5)	2.09 ± 0.03(-5)	3.3 ± 0.2 (-5)

* Radionuclide not measured.

Table B.3-42 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-29-82 1110	10-4-82 1227	10-19-82 1446	10-20-82 1215
^{84}Br	*	*	*	*
^{131}I	<2(-7)	5.9 ± 0.8 (-7)	2.34 ± 0.08(-6)	3.05 ± 0.07(-6)
^{132}I	<5(-5)	*	1.4 ± 0.2 (-5)	*
^{133}I	<3(-7)	9.6 ± 0.3 (-6)	2.84 ± 0.03(-5)	3.74 ± 0.03(-5)
^{134}I	*	*	*	*
^{135}I	<2(-6)	1.4 ± 0.2 (-5)	5.2 ± 0.1 (-5)	6.4 ± 0.2 (-5)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	2.8 ± 0.5 (-7)	<2(-7)	<2(-7)	1.8 ± 0.3 (-7)
^{136}Cs	<2(-7)	<2(-7)	<3(-7)	<2(-6)
^{137}Cs	4.8 ± 0.9 (-7)	<3(-7)	<2(-7)	2.4 ± 0.5 (-7)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<2(-7)	3.5 ± 0.4 (-6)	4.9 ± 0.2 (-6)	2.1 ± 0.1 (-6)
^{51}Cr	<9(-7)	<2(-6)	<2(-6)	<1(-6)
^{54}Mn	2.4 ± 0.2 (-6)	6 ± 1 (-7)	2.1 ± 0.1 (-6)	1.9 ± 0.1 (-6)
^{59}Fe	<3(-7)	<2(-7)	<3(-7)	<2(-7)
^{58}Co	1.2 ± 0.1 (-6)	5.4 ± 0.7 (-7)	9.7 ± 0.7 (-7)	1.00 ± 0.09(-6)

Table B.3-42 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-29-82 1110	10-4-82 1227	10-19-82 1446	10-20-82 1215
^{60}Co	2.09 ± 0.03(-5)	4.6 ± 0.2 (-6)	6.1 ± 0.1 (-6)	7.6 ± 0.2 (-6)
^{65}Zn	<7(-7)	<4(-7)	<3(-7)	<3(-7)
^{91}Sr	<3(-6)	<6(-6)	6.2 ± 0.5 (-6)	9 ± 1 (-6)
^{91m}Y	*	*	*	*
^{95}Nb	<2(-7)	<2(-7)	<2(-7)	<1(-7)
^{99}Mo	<2(-6)	<3(-6)	<2(-6)	<2(-6)
^{110m}Ag	<2(-7)	<2(-7)	<2(-7)	<2(-7)
^{132}Te	<2(-7)	<3(-7)	<2(-7)	<4(-7)
^{139}Ba	*	*	<4(-4)	<2(-6)
^{140}Ba	<6(-7)	<6(-7)	<3(-6)	<2(-6)
^{140}La	<2(-7)	<3(-7)	<4(-7)	2.8 ± 0.5 (-7)
^{141}Ce	<2(-7)	<5(-7)	<3(-7)	<2(-7)
^{239}Np	<4(-7)	1.06 ± 0.03(-5)	3.6 ± 0.2 (-6)	3.7 ± 0.6 (-6)

* Radionuclide not measured.

Table B.3-43
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 1305
^{84}Br	<7(-6)
^{131}I	4.12 ± 0.07(-5)
^{132}I	5.31 ± 0.08(-5)
^{133}I	1.0 ± 0.3 (-6)
^{134}I	<2(-6)
^{135}I	<2(-6)
^{88}Rb	<2(-5)
^{89}Rb	<4(-5)
^{134}Cs	1.06 ± 0.01(-4)
^{136}Cs	2.08 ± 0.04(-5)
^{137}Cs	1.17 ± 0.03(-4)
^{138}Cs	<2(-6)
^{139}Cs	<6(-4)
^{24}Na	<1(-7)
^{51}Cr	<9(-6)
^{54}Mn	1.05 ± 0.01(-4)
^{59}Fe	<7(-7)
^{58}Co	7.64 ± 0.06(-5)

Table B.3-43 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 1305
^{60}Co	2.34 ± 0.04(-4)
^{65}Zn	1.63 ± 0.08(-5)
^{91}Sr	<2(-6)
^{91m}Y	<4(-6)
^{93}Y	<2(-5)
^{93}Zr	<9(-7)
^{95}Nb	<7(-7)
^{99}Mo	<5(-6)
^{110m}Ag	<2(-6)
^{132}Te	<5(-7)
^{139}Ba	<4(-6)
^{140}Ba	8.3 ± 0.8 (-6)
^{141}Ce	<5(-7)
^{143}Ce	<8(-7)
^{239}Np	2.84 ± 0.07(-5)

Table B.3-44
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-23-82 1140	3-25-82 1012	4-3-82 1206	4-8-82 0859	4-13-82 1009	4-20-82 1150
^{84}Br	3 ± 1 (-5)	<2(-4)	<1(-5)	<5(-5)	<8(-6)	<4(-5)
^{131}I	2.75 ± 0.04(-5)	4.26 ± 0.07(-5)	3.6 ± 0.1 (-6)	1.07 ± 0.02(-5)	1.19 ± 0.01(-5)	1.03 ± 0.02(-5)
^{132}I	1.24 ± 0.02(-4)	1.96 ± 0.04(-4)	2.16 ± 0.06(-5)	4.8 ± 0.1 (-5)	5.2 ± 0.1 (-5)	6.0 ± 0.2 (-5)
^{133}I	1.78 ± 0.01(-4)	2.5 ± 0.2 (-4)	2.59 ± 0.05(-5)	7.2 ± 0.3 (-5)	7.5 ± 0.1 (-5)	6.9 ± 0.1 (-5)
^{134}I	2.49 ± 0.03(-4)	3.63 ± 0.07(-4)	4.8 ± 0.2 (-5)	9.5 ± 0.3 (-5)	9.7 ± 0.2 (-5)	1.15 ± 0.03(-4)
^{135}I	1.7 ± 0.6 (-4)	3.99 ± 0.04(-4)	3.9 ± 0.1 (-5)	1.01 ± 0.02(-4)	1.2 ± 0.1 (-4)	1.15 ± 0.03(-4)
^{88}Rb	<2(-4)	<7(-4)	<4(-4)	<2(-4)	<2(-5)	<2(-4)
^{89}Rb	3.8 ± 0.2 (-4)	<1(-3)	<2(-4)	2.8 ± 0.8 (-4)	1.5 ± 0.1 (-4)	2.1 ± 0.3 (-4)
^{134}Cs	2.0 ± 0.1 (-6)	3.1 ± 0.1 (-6)	1.7 ± 0.3 (-7)	4.9 ± 0.3 (-7)	4.7 ± 0.4 (-7)	5.1 ± 0.5 (-7)
^{136}Cs	<2(-6)	2.0 ± 0.2 (-6)	1.5 ± 0.7 (-7)	4.1 ± 0.7 (-7)	5.8 ± 0.6 (-7)	6 ± 1 (-7)
^{137}Cs	2.3 ± 0.2 (-6)	4.0 ± 0.3 (-6)	2.2 ± 0.6 (-7)	5.8 ± 0.7 (-7)	7.4 ± 0.6 (-7)	6.7 ± 0.7 (-7)
^{138}Cs	2.9 ± 0.2 (-4)	4.2 ± 0.1 (-4)	1.20 ± 0.06(-4)	1.37 ± 0.06(-4)	1.60 ± 0.05(-4)	1.94 ± 0.08(-4)
^{139}Cs	1.0 ± 0.4 (-3)	*	*	*	2.1 ± 0.8 (-4)	<3(-3)
^{24}Na	2.69 ± 0.03(-4)	6.2 ± 0.1 (-4)	4.3 ± 0.1 (-5)	9.3 ± 0.7 (-5)	1.17 ± 0.02(-4)	1.56 ± 0.04(-4)
^{51}Cr	6 ± 1 (-6)	5.5 ± 0.9 (-6)	4.7 ± 0.4 (-6)	8.8 ± 0.4 (-6)	8.1 ± 0.3 (-6)	5.8 ± 0.7 (-6)
^{54}Mn	5 ± 1 (-7)	6 ± 1 (-7)	<1(-7)	1.4 ± 0.5 (-7)	2.0 ± 0.5 (-7)	1.4 ± 0.5 (-7)
^{59}Fe	<5(-7)	<3(-7)	<1(-7)	<2(-7)	<2(-7)	<3(-7)
^{58}Co	8 ± 2 (-7)	7 ± 2 (-7)	<9(-8)	2.5 ± 0.4 (-7)	1.5 ± 0.3 (-7)	2.7 ± 0.9 (-7)

Table B.3-44 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-23-82 1140	3-25-82 1012	4-3-82 1206	4-8-82 0859	4-13-82 1009	4-20-82 1150
^{60}Co	1.2 ± 0.1 (-6)	2.0 ± 0.2 (-6)	<2(-7)	4.9 ± 0.5 (-7)	5.1 ± 0.5 (-7)	6.7 ± 0.9 (-7)
^{65}Zn	4 ± 2 (-6)	7 ± 3 (-7)	<3(-7)	<2(-7)	1.7 ± 0.7 (-7)	2.1 ± 0.8 (-7)
^{91}Sr	1.6 ± 0.2 (-5)	1.6 ± 0.2 (-5)	2.7 ± 0.8 (-6)	9 ± 2 (-6)	8 ± 1 (-6)	1.3 ± 0.2 (-5)
^{91m}Y	4 ± 2 (-6)	1.1 ± 0.5 (-5)	<6(-6)	<8(-6)	<6(-6)	<1(-5)
^{95}Nb	<2(-7)	<3(-7)	<1(-7)	<8(-8)	<6(-8)	<2(-7)
^{99}Mo	3 ± 1 (-6)	<7(-6)	<3(-6)	6 ± 2 (-6)	<3(-6)	3 ± 1 (-6)
^{110m}Ag	<4(-7)	<3(-7)	<9(-8)	<2(-7)	<2(-7)	<8(-8)
^{132}Te	<7(-7)	<1(-6)	<3(-7)	<4(-7)	<3(-7)	<6(-7)
^{139}Ba	2.39 ± 0.05(-4)	2.67 ± 0.05(-4)	6.1 ± 0.3 (-5)	1.28 ± 0.07(-4)	1.34 ± 0.06(-4)	1.68 ± 0.05(-4)
^{140}Ba	2.0 ± 0.4 (-6)	4.9 ± 0.6 (-6)	7 ± 2 (-7)	1.2 ± 0.2 (-6)	1.2 ± 0.2 (-6)	2.0 ± 0.3 (-6)
^{140}La	<2(-6)	<2(-6)	<4(-7)	<8(-7)	<3(-7)	8 ± 2 (-7)
^{141}Ce	<4(-7)	<5(-7)	<2(-7)	<3(-7)	<2(-7)	<3(-7)
^{239}Np	4.6 ± 0.1 (-5)	8.4 ± 0.1 (-5)	8.3 ± 0.5 (-6)	3.00 ± 0.08(-5)	2.97 ± 0.04(-5)	3.3 ± 0.1 (-5)

* Radionuclide not measured.

Table B.3-45
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-23-82 1145	3-28-82 1506	4-3-82 1216	4-8-82 0858	4-13-82 1007	4-20-82 1150
^{84}Br	<2(-5)	<9(-7)	<4(-5)	<4(-6)	<1(-5)	<2(-5)
^{131}I	1.36 ± 0.02(-5)	<7(-8)	1.37 ± 0.02(-5)	1.49 ± 0.07(-6)	5.2 ± 0.1 (-6)	7.0 ± 0.2 (-6)
^{132}I	3.9 ± 0.1 (-5)	<9(-8)	4.3 ± 0.1 (-5)	6.2 ± 0.4 (-6)	1.38 ± 0.06(-5)	2.6 ± 0.1 (-5)
^{133}I	6.3 ± 0.1 (-5)	<2(-7)	7.7 ± 0.2 (-5)	1.09 ± 0.08(-5)	2.93 ± 0.04(-5)	4.9 ± 0.1 (-5)
^{134}I	6.4 ± 0.2 (-5)	4 ± 2 (-7)	7.9 ± 0.2 (-5)	1.21 ± 0.09(-5)	1.9 ± 0.1 (-5)	3.8 ± 0.2 (-5)
^{135}I	9.3 ± 0.2 (-6)	<4(-7)	1.02 ± 0.02(-4)	1.4 ± 0.1 (-5)	3.2 ± 0.1 (-5)	5.7 ± 0.3 (-5)
^{88}Rb	<3(-4)	<8(-6)	4 ± 2 (-4)	<6(-5)	<2(-4)	<2(-4)
^{89}Rb	3.1 ± 0.3 (-4)	<7(-6)	<4(-4)	3.9 ± 0.7 (-5)	8 ± 2 (-5)	1.4 ± 0.2 (-4)
^{134}Cs	3.9 ± 0.1 (-6)	<9(-8)	1.14 ± 0.05(-6)	<9(-8)	1.3 ± 0.2 (-7)	3.7 ± 0.4 (-7)
^{136}Cs	1.3 ± 0.1 (-6)	<8(-8)	8.1 ± 0.7 (-7)	<2(-7)	<3(-7)	6.4 ± 0.9 (-7)
^{137}Cs	4.3 ± 0.3 (-6)	<2(-7)	1.29 ± 0.08(-6)	<7(-8)	1.8 ± 0.3 (-7)	4.3 ± 0.8 (-7)
^{138}Cs	3.50 ± 0.07(-4)	<9(-7)	3.12 ± 0.09(-4)	<4(-5)	7.5 ± 0.3 (-5)	1.54 ± 0.06(-4)
^{139}Cs	<5(-3)	<2(-4)	*	<6(-4)	<2(-3)	<3(-3)
^{24}Na	2.16 ± 0.03(-4)	<9(-8)	2.10 ± 0.08(-4)	1.79 ± 0.08(-5)	5.3 ± 0.1 (-5)	1.35 ± 0.02(-4)
^{51}Cr	<3(-6)	1.1 ± 0.5 (-6)	1.4 ± 0.4 (-6)	7 ± 3 (-7)	3.7 ± 0.3 (-6)	2.1 ± 0.4 (-6)
^{54}Mn	2.1 ± 0.8 (-7)	<2(-7)	2.3 ± 0.6 (-7)	7 ± 3 (-8)	<7(-8)	<2(-7)
^{59}Fe	<3(-7)	<2(-7)	<2(-7)	<1(-7)	<2(-7)	<2(-7)
^{58}Co	4 ± 1 (-7)	<9(-8)	4.4 ± 0.5 (-7)	<1(-7)	1.0 ± 0.3 (-7)	2.0 ± 0.5 (-7)

Table B.3-45 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-23-82 1145	3-28-82 1506	4-3-82 1216	4-8-82 0858	4-13-82 1007	4-20-82 1150
^{60}Co	5 ± 1 (-7)	<2(-7)	1.06 ± 0.09(-6)	<2(-7)	1.9 ± 0.6 (-7)	3.2 ± 0.8 (-7)
^{65}Zn	<9(-7)	<3(-7)	2 ± 1 (-7)	<2(-7)	<2(-7)	<3(-7)
^{91}Sr	6 ± 2 (-6)	<3(-7)	5 ± 1 (-6)	<4(-6)	4.4 ± 0.8 (-6)	<1(-5)
^{91m}Y	<6(-6)	<2(-7)	<6(-6)	<1(-6)	<2(-6)	7 ± 1 (-6)
^{95}Nb	<2(-7)	<1(-7)	<8(-8)	<7(-8)	<5(-8)	1.1 ± 0.4 (-7)
^{99}Mo	<3(-6)	<5(-7)	<3(-6)	<2(-6)	<2(-6)	<6(-6)
^{110m}Ag	<3(-7)	1.0 ± 0.4 (-7)	6 ± 3 (-8)	<6(-8)	<8(-8)	<2(-7)
^{132}Te	<5(-7)	<2(-7)	9 ± 4 (-7)	<4(-7)	<2(-7)	<7(-7)
^{139}Ba	2.00 ± 0.03(-4)	<6(-7)	1.46 ± 0.04(-4)	2.4 ± 0.3 (-5)	5.0 ± 0.3 (-5)	1.35 ± 0.05(-4)
^{140}Ba	<2(-6)	3 ± 1 (-7)	1.2 ± 0.2 (-6)	<5(-7)	5 ± 1 (-7)	1.6 ± 0.2 (-6)
^{140}La	<8(-7)	3.0 ± 0.9 (-7)	<7(-7)	<4(-7)	<5(-7)	<2(-6)
^{141}Ce	<7(-7)	1.5 ± 0.7 (-7)	<2(-7)	1.6 ± 0.8 (-6)	<1(-7)	<3(-7)
^{239}Np	3.9 ± 0.2 (-5)	<5(-7)	3.95 ± 0.07(-5)	3.4 ± 0.6 (-6)	1.58 ± 0.03(-5)	3.3 ± 0.1 (-5)

* Radionuclide not measured.

Table B.3-46
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 1110

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<3(-8)	<2(-7)	a	<2(-7)
^{132}I	*	*	*	<5(-5)
^{133}I	<7(-6)	<9(-6)	a	<3(-7)
^{134}I	*	*	*	*
^{135}I	*	*	*	<2(-6)
^{134}Cs	<2(-8)	<3(-7)	a	2.8 ± 0.5 (-7)
^{137}Cs	<2(-8)	<2(-7)	a	4.8 ± 0.9 (-7)
^{24}Na	*	<2(-5)	a, *	<2(-7)
^{51}Cr	<2(-7)	<2(-6)	a	<9(-7)
^{54}Mn	5.5 ± 0.9 (-8)	1.6 ± 0.1 (-6)	1.7 ± 0.1 (-6)[b]	2.4 ± 0.2 (-6)
^{59}Fe	<3(-8)	<2(-7)	a	<3(-7)
^{58}Co	<2(-8)	1.1 ± 0.1 (-6)	1.1 ± 0.1 (-6)	1.2 ± 0.1 (-6)
^{60}Co	2.3 ± 0.2 (-7)	1.67 ± 0.04(-5)	1.69 ± 0.04(-5)[b]	2.09 ± 0.03(-5)
^{65}Zn	<4(-8)	8 ± 2 (-7)	8.2 ± 0.2 (-7)[b]	<7(-7)
^{91}Sr	*	*	*	<3(-6)
^{95}Zr	<4(-8)	<4(-7)	a	<3(-7)
^{95}Nb	<2(-8)	<2(-7)	a	<2(-7)

Table B.3-46 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 1110

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{99}Mo	<7(-7)	<6(-6)	a	<2(-6)
^{132}Te	<4(-8)	<3(-7)	a	<2(-7)
^{139}Ba	*	*	*	*
^{140}Ba	<7(-8)	<7(-7)	a	<6(-7)
^{239}Np	<3(-7)	<3(-6)	a	<4(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and greab values do not agree.

Table B.3-47
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-23-82
Time: 1140

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<7(-4)	a, *	3 ± 1 (-5)
^{131}I	5 ± 1 (-8)	2.78 ± 0.05(-5)	2.78 ± 0.05(-5)	2.75 ± 0.04(-5)
^{132}I	*	1.27 ± 0.02(-4)	a, *	1.24 ± 0.02(-4)
^{133}I	1.6 ± 0.3 (-7)	1.76 ± 0.08(-4)	1.76 ± 0.08(-4)	1.78 ± 0.01(-4)
^{134}I	*	1.9 ± 0.2 (-4)	a, *	2.49 ± 0.03(-4)
^{135}I	<2(-6)	2.69 ± 0.03(-4)	2.69 ± 0.03(-4)[b]	1.7 ± 0.6 (-4)
^{134}Cs	*	*	*	*
^{137}Cs	1.9 ± 0.2 (-7)	2.6 ± 0.3 (-6)	2.8 ± 0.4 (-6)	2.3 ± 0.2 (-6)
^{24}Na	1.5 ± 0.1 (-6)	2.60 ± 0.04(-4)	2.62 ± 0.04(-4)	2.69 ± 0.03(-4)
^{51}Cr	2.3 ± 0.1 (-6)	<9(-6)	a	6 ± 1 (-6)
^{54}Mn	<5(-8)	<2(-6)	a	5 ± 1 (-7)
^{59}Fe	<5(-8)	<2(-6)	a	<5(-7)
^{58}Co	2 ± 1 (-8)	<2(-6)	a	8 ± 2 (-7)
^{60}Co	9 ± 2 (-8)	<7(-7)	a	1.2 + 0.1 (-6)
^{91}Sr	<8(-7)	1.0 ± 0.2 (-5)	1.0 ± 0.2 (-5)[b]	1.6 ± 0.2 (-5)
^{99}Mo	<2(-7)	<7(-6)	a	3 ± 1 (-6)
^{139}Ba	*	1.6 ± 0.1 (-4)	a, *	2.39 ± 0.05(-4)

Table B.3-47 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-23-82
Time: 1140

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<2(-7)	<4(-6)	a	2.0 ± 0.4 (-6)
^{239}Np	<2(-7)	4.3 ± 0.1 (-5)	4.4 ± 0.1 (-5)	4.6 ± 0.1 (-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-47 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1206

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	1.1 ± 0.5 (-8)	3.5 ± 0.1 (-6)	3.5 ± 0.1 (-6)	3.6 ± 0.1 (-6)
^{132}I	<3(-6)	2.23 ± 0.09(-5)	a	2.16 ± 0.06(-5)
^{133}I	6.1 ± 0.9 (-8)	2.61 ± 0.05(-5)	2.62 ± 0.05(-5)	2.59 ± 0.05(-5)
^{134}I	*	4.90 ± 0.06(-5)	a, *	4.8 ± 0.2 (-5)
^{135}I	3 ± 1 (-7)	4.1 ± 0.1 (-5)	4.1 ± 0.1 (-5)	3.9 ± 0.1 (-5)
^{134}Cs	<2(-8)	<2(-7)	a	1.7 ± 0.3 (-7)
^{137}Cs	3.2 ± 0.7 (-8)	<2(-7)	a	2.2 ± 0.6 (-7)
^{24}Na	5.3 ± 0.3 (-7)	4.3 ± 0.1 (-5)	4.3 ± 0.1 (-5)	4.3 ± 0.1 (-5)
^{51}Cr	1.44 ± 0.06(-6)	4.0 ± 0.7 (-6)	5.5 ± 0.7 (-6)	4.7 ± 0.4 (-6)
^{54}Mn	2.1 ± 0.6 (-8)	<2(-7)	a	<1(-7)
^{59}Fe	3.0 ± 0.8 (-8)	<2(-7)	a	<1(-7)
^{58}Co	<2(-8)	<9(-8)	a	<9(-8)
^{60}Co	3 ± 1 (-8)	<3(-7)	a	<2(-7)
^{91}Sr	<3(-7)	<3(-6)	a	2.7 ± 0.8 (-6)
^{99}Mo	<2(-7)	<3(-6)	a	<3(-6)
^{132}Te	<2(-8)	<4(-7)	a	<3(-7)
^{139}Ba	*	<2(-5)	a, *	6.1 ± 0.3 (-5)

Table B.3-47 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1206

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	4 ± 2 (-8)	<4(-7)	a	7 ± 2 (-7)
^{239}Np	6 ± 2 (-8)	8.1 ± 0.4 (-6)	8.1 ± 0.4 (-6)	8.3 ± 0.5 (-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-48
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-23-82
Time: 1145

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<7(-4)	a, *	<2(-5)
^{131}I	<2(-8)	1.20 ± 0.06(-5)	1.20 ± 0.06(-5)	1.36 ± 0.02(-5)
^{132}I	*	3.5 ± 0.2 (-5)	a, *	3.9 ± 0.1 (-5)
^{133}I	<7(-8)	5.9 ± 0.1 (-5)	5.9 ± 0.1 (-5)	6.3 ± 0.1 (-5)
^{134}I	*	5 ± 2 (-5)	a, *	6.4 ± 0.2 (-5)
^{135}I	<2(-6)	8.9 ± 0.2 (-5)	8.9 ± 0.3 (-5)[b]	9.3 ± 0.2 (-6)
^{134}Cs	*	*	*	*
^{137}Cs	4.8 ± 0.2 (-7)	4.2 ± 0.4 (-6)	4.6 ± 0.4 (-6)	4.3 ± 0.3 (-6)
^{24}Na	1.0 ± 0.1 (-6)	2.06 + 0.04(-4)	2.07 ± 0.04(-4)	2.16 ± 0.03(-4)
^{51}Cr	1.5 ± 0.6 (-7)	<5(-6)	a	<3(-6)
^{54}Mn	<2(-8)	<2(-6)	a	2.1 ± 0.8 (-7)
^{59}Fe	<4(-8)	<2(-6)	a	<3(-7)
^{58}Co	<4(-8)	<8(-7)	a	4 ± 1 (-7)
^{60}Co	<3(-8)	<6(-7)	a	5 + 1 (-7)
^{91}Sr	<3(-7)	<6(-6)	a	6 ± 2 (-6)
^{99}Mo	<1(-7)	<6(-6)	a	<3(-6)
^{132}Te	*	*	*	*
^{139}Ba	*	1.3 ± 0.1 (-4)	a, *	2.00 ± 0.03(-4)

Table B.3-48 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-23-82
Time: 1145

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<9(-8)	<2(-6)	a	<2(-6)
^{239}Np	1.6 ± 0.3 (-7)	3.8 ± 0.2 (-5)	3.8 ± 0.2 (-5)	3.9 ± 0.2 (-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-48 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1216

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<2(-4)	a, *	<4(-5)
^{131}I	4.2 ± 0.6 (-8)	1.42 ± 0.04(-5)	1.42 ± 0.04(-5)	1.37 ± 0.02(-5)
^{132}I	<2(-7)	4.4 ± 0.1 (-5)	4.4 ± 0.1 (-5)	4.3 ± 0.1 (-5)
^{133}I	1.9 ± 0.1 (-7)	7.8 ± 0.1 (-5)	7.8 ± 0.1 (-5)	7.7 ± 0.2 (-5)
^{134}I	<2(-6)	7.8 ± 0.7 (-5)	7.8 ± 0.7 (-5)	7.9 ± 0.2 (-5)
^{135}I	2.2 ± 0.6 (-7)	1.00 ± 0.03(-4)	1.00 ± 0.03(-4)	1.02 ± 0.02(-4)
^{134}Cs	1.29 ± 0.08(-7)	8.5 ± 0.8 (-7)	9.8 ± 0.8 (-7)	1.14 ± 0.05(-6)
^{137}Cs	1.6 ± 0.1 (-7)	1.0 ± 0.1 (-6)	1.1 ± 0.1 (-6)	1.29 ± 0.08(-6)
^{24}Na	2.51 ± 0.06(-6)	2.14 + 0.04(-4)	2.17 ± 0.04(-4)	2.10 ± 0.08(-4)
^{51}Cr	3.8 ± 0.8 (-7)	<3(-6)	a	1.4 ± 0.4 (-6)
^{54}Mn	1.9 ± 0.9 (-8)	<2(-7)	a	2.3 ± 0.6 (-7)
^{59}Fe	<3(-8)	<3(-7)	a	<2(-7)
^{58}Co	5 ± 1 (-8)	<3(-7)	a	4.4 ± 0.5 (-7)
^{60}Co	1.2 ± 0.1 (-7)	4 ± 1 (-7)	5 ± 1 (-7)[b]	1.06 + 0.09(-6)
^{91}Sr	2.5 ± 0.4 (-7)	3 ± 1 (-6)	4 ± 1 (-6)	5 ± 1 (-6)
^{99}Mo	<2(-7)	<4(-6)	a	<3(-6)
^{132}Te	<2(-8)	<5(-7)	a	9 ± 4 (-7)
^{139}Ba	6.4 ± 0.5 (-6)	1.8 ± 0.6 (-5)	2.4 ± 0.6 (-5)[b]	1.46 ± 0.04(-4)

Table B.3-48 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1216

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	7 ± 3 (-8)	<8(-7)	a	1.2 ± 0.2 (-6)
^{239}Np	4.5 ± 0.2 (-7)	3.89 ± 0.09(-5)	3.94 ± 0.09(-5)	3.95 ± 0.07(-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-48 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0857

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<9(-5)	<5(-5)	a	<4(-6)
^{131}I	<5(-8)	1.82 ± 0.09(-6)	1.8 ± 0.1 (-6)[b]	1.49 ± 0.07(-6)
^{132}I	<2(-7)	6.7 ± 0.4 (-6)	6.7 ± 0.4 (-6)	6.2 ± 0.4 (-6)
^{133}I	<3(-8)	1.04 ± 0.04(-5)	1.04 ± 0.04(-5)	1.09 ± 0.08(-5)
^{134}I	<2(-6)	9 ± 2 (-6)	a	1.21 ± 0.09(-5)
^{135}I	<2(-7)	1.33 ± 0.07(-5)	1.33 ± 0.07(-5)	1.4 ± 0.1 (-5)
^{134}Cs	<3(-8)	1.0 ± 0.3 (-7)	a	<9(-8)
^{137}Cs	<4(-8)	<8(-8)	a	<7(-8)
^{24}Na	1.7 ± 0.3 (-7)	1.7 + 0.1 (-5)	1.7 ± 0.1 (-5)	1.79 ± 0.08(-5)
^{51}Cr	7 ± 1 (-7)	<9(-7)	a	7 ± 3 (-7)
^{54}Mn	<3(-8)	<7(-8)	a	7 ± 3 (-8)
^{59}Fe	<7(-8)	<9(-8)	a	<1(-7)
^{58}Co	<3(-8)	<7(-8)	a	<1(-7)
^{60}Co	1.2 ± 0.5 (-7)	<2(-7)	a	<2(-7)
^{91}Sr	<3(-7)	<1(-6)	a	<4(-6)
^{99}Mo	<2(-7)	1.6 ± 0.8 (-6)	a	<2(-6)
^{132}Te	<2(-8)	<4(-7)	a	<4(-7)
^{139}Ba	1.2 ± 0.6 (-6)	1.1 ± 0.3 (-5)	1.2 ± 0.3 (-5)[b]	2.4 ± 0.3 (-5)

Table 8.3-48 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0857

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<2(-7)	4 ± 1 (-7)	a	<5(-7)
^{239}Np	<2(-7)	4.6 ± 0.5 (-6)	4.6 ± 0.5 (-6)	3.4 ± 0.6 (-6)

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-49
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0821	3-26-82 0757	4-6-82 0935	4-11-82 0915	4-20-82 1150
^{84}Br	<1(-4)	<3(-6)	<2(-5)	*	<7(-6)
^{131}I	2.9 ± 0.3 (-7)	2.9 ± 0.3 (-7)	<2(-7)	<3(-7)	<2(-7)
^{132}I	<5(-7)	<7(-7)	5 ± 1 (-7)	<2(-6)	<5(-7)
^{133}I	1.7 ± 0.5 (-7)	4.8 ± 0.8 (-7)	2 ± 1 (-7)	<3(-7)	<3(-7)
^{134}I	<4(-6)	<2(-6)	<2(-6)	<2(-5)	<4(-6)
^{135}I	<9(-7)	<3(-6)	<9(-7)	<2(-6)	<3(-6)
^{88}Rb	*	<1(-4)	<8(-4)	*	<3(-4)
^{89}Rb	*	<3(-5)	*	*	<1(-4)
^{134}Cs	<9(-8)	<8(-8)	<7(-8)	<8(-8)	<6(-8)
^{136}Cs	<3(-7)	<5(-8)	<7(-8)	<1(-7)	<7(-8)
^{137}Cs	<2(-7)	<6(-8)	<1(-7)	<2(-7)	<1(-7)
^{138}Cs	<5(-5)	5.7 ± 0.3 (-5)	3.2 ± 0.5 (-5)	*	2.0 ± 0.4 (-5)
^{139}Cs	*	<3(-3)	*	*	*
^{24}Na	<2(-7)	<2(-7)	<3(-7)	<4(-7)	<3(-7)
^{51}Cr	<1(-6)	<5(-7)	<7(-7)	<2(-6)	<9(-7)
^{54}Mn	<9(-8)	<6(-8)	1.2 ± 0.3 (-7)	1.5 ± 0.7 (-7)	<2(-7)
^{59}Fe	<2(-7)	<3(-7)	<9(-8)	<2(-7)	<8(-8)
^{58}Co	<7(-8)	<7(-8)	<7(-8)	<2(-7)	<8(-8)

Table B.3-49 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	3-15-82 0821	3-26-82 0757	4-6-82 0935	4-11-82 0915	4-20-82 1150
^{60}Co	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<2(-7)
^{65}Zn	<2(-7)	<7(-8)	<2(-7)	<3(-7)	<2(-7)
^{91}Sr	<3(-7)	<7(-7)	<6(-7)	<5(-7)	<2(-6)
^{91m}Y	<3(-6)	<7(-7)	<2(-6)	<5(-5)	<2(-6)
^{95}Nb	<6(-8)	<8(-8)	<8(-8)	<7(-8)	<6(-8)
^{99}Mo	<7(-7)	<4(-7)	<7(-7)	<3(-6)	<7(-7)
^{110m}Ag	<6(-8)	<5(-8)	<6(-8)	<9(-8)	<7(-8)
^{132}Te	<2(-7)	<3(-7)	<2(-7)	<2(-7)	<2(-7)
^{139}Ba	<2(-5)	<5(-6)	<5(-6)	<6(-5)	<7(-6)
^{140}Ba	<4(-7)	<4(-7)	<3(-7)	<5(-7)	<3(-7)
^{140}La	<2(-7)	<2(-7)	<3(-7)	<3(-7)	<2(-7)
^{141}Ce	<3(-7)	3 ± 1 (-6)	<2(-7)	<3(-7)	<2(-7)
^{239}Np	<8(-7)	<4(-7)	<8(-7)	<8(-7)	<8(-7)

* Radionuclide not measured.

Table B.3-49 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 7-27-82 1050	9-27-82 1030	9-29-82 1110	10-4-82 1229	10-20-82 1216
^{84}Br	<4(-6)	<3(-6)	<4(-6)	*	*
^{131}I	<1(-7)	<2(-7)	<9(-8)	<1(-7)	<2(-7)
^{132}I	<3(-7)	<2(-7)	<2(-7)	*	*
^{133}I	<2(-7)	<9(-8)	<8(-8)	<4(-7)	<5(-7)
^{134}I	<9(-7)	<5(-7)	<4(-7)	*	*
^{135}I	<3(-7)	<2(-7)	<3(-7)	<5(-6)	<8(-6)
^{88}Rb	<2(-5)	<2(-5)	<2(-5)	*	*
^{89}Rb	<3(-5)	<9(-6)	<2(-5)	*	*
^{134}Cs	<1(-7)	<2(-7)	<1(-7)	<8(-8)	<2(-7)
^{136}Cs	<1(-7)	<8(-8)	<9(-8)	<1(-7)	<2(-7)
^{137}Cs	<2(-7)	<9(-8)	<2(-7)	<2(-7)	<2(-7)
^{138}Cs	<2(-6)	<1(-6)	<7(-7)	*	*
^{139}Cs	*	<8(-4)	*	*	*
^{24}Na	<4(-8)	<5(-8)	<6(-8)	<2(-7)	<1(-7)
^{51}Cr	<7(-7)	<5(-7)	<7(-7)	<7(-7)	<2(-6)
^{54}Mn	3.1 + 0.7 (-7)	<8(-8)	<2(-7)	<2(-7)	1.9 ± 0.7 (-7)
^{59}Fe	<3(-7)	<9(-8)	<2(-7)	<2(-7)	<3(-7)
^{58}Co	<2(-7)	<6(-8)	<8(-8)	<8(-8)	<2(-7)

Table B.3-49 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 7-27-82 1050	9-27-82 1030	9-29-82 1110	10-4-82 1229	10-20-82 1216
^{60}Co	2.2 + 0.1 (-6)	<3(-7)	<2(-7)	<2(-7)	<4(-7)
^{65}Zn	<3(-7)	<2(-7)	<2(-7)	<4(-7)	<3(-7)
^{91}Sr	<4(-7)	<2(-7)	<3(-7)	<2(-6)	<3(-6)
^{91m}Y	<6(-7)	<3(-7)	<4(-7)	*	*
^{95}Nb	<1(-7)	<6(-8)	<2(-7)	<8(-8)	<2(-7)
^{99}Mo	<1(-6)	<5(-7)	<1(-6)	<8(-7)	<2(-6)
^{110m}Ag	*	<8(-8)	<1(-7)	<7(-8)	<8(-8)
^{132}Te	<1(-7)	<8(-8)	<7(-8)	<1(-7)	<2(-7)
^{139}Ba	<2(-6)	<6(-7)	<8(-7)	*	*
^{140}Ba	<4(-7)	<3(-7)	<5(-7)	<5(-7)	<5(-7)
^{140}La	<8(-8)	<6(-8)	<8(-8)	<1(-7)	<2(-7)
^{141}Ce	<2(-7)	<1(-7)	<2(-7)	<2(-7)	<2(-7)
^{239}Np	<4(-7)	<2(-7)	<3(-7)	<4(-7)	<9(-7)

* Radionuclide not measured.

Table B.3-50
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-21-82 0945	3-25-82 1002	3-28-82 1458	4-3-82 1232	4-8-82 0848	4-13-82 1003
^{84}Br	<5(-6)	<6(-6)	<2(-6)	<2(-5)	<3(-6)	<6(-5)
^{131}I	1.4 ± 0.6 (-7)	<7(-8)	2 ± 1 (-7)	<2(-7)	<4(-7)	<2(-7)
^{132}I	<4(-7)	<5(-7)	<8(-7)	3 ± 1 (-7)	<5(-7)	6 ± 2 (-7)
^{133}I	<5(-7)	<4(-7)	3.4 ± 0.7 (-7)	1.8 ± 0.6 (-7)	<6(-7)	1.9 ± 0.8 (-7)
^{134}I	<8(-7)	<2(-6)	<1(-6)	<2(-6)	<2(-6)	<6(-6)
^{135}I	<9(-7)	<3(-6)	<1(-6)	<5(-7)	<3(-6)	<8(-7)
^{88}Rb	<8(-5)	<3(-4)	<3(-5)	<4(-4)	<4(-5)	*
^{89}Rb	<2(-5)	<4(-4)	<2(-5)	*	<4(-5)	*
^{134}Cs	<5(-8)	<7(-8)	<2(-7)	<2(-7)	<5(-7)	<8(-8)
^{136}Cs	<2(-7)	<8(-8)	<7(-8)	<2(-7)	<6(-7)	<2(-7)
^{137}Cs	<2(-7)	<2(-7)	<6(-8)	1.9 ± 0.4 (-7)	<5(-7)	<2(-7)
^{138}Cs	4.1 ± 0.2 (-5)	6.6 ± 0.4 (-5)	3.5 ± 0.5 (-5)	5.7 ± 0.3 (-5)	2.5 ± 0.3 (-5)	<2(-4)
^{139}Cs	<1(-3)	*	<3(-4)	*	<2(-3)	*
^{24}Na	<3(-7)	<2(-7)	<2(-7)	<2(-7)	<4(-7)	<2(-7)
^{51}Cr	<9(-7)	<5(-7)	8 ± 2 (-7)	<6(-7)	<3(-6)	<7(-7)
^{54}Mn	<4(-8)	<3(-8)	<7(-8)	<1(-7)	<5(-7)	<2(-7)
^{59}Fe	1.5 ± 0.4 (-7)	<5(-8)	<8(-8)	<2(-7)	<9(-7)	<2(-7)
^{58}Co	<4(-8)	<4(-8)	<4(-8)	<6(-8)	<3(-7)	<7(-8)

Table B.3-50 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-21-82 0945	3-25-82 1002	3-28-82 1458	4-3-82 1232	4-8-82 0848	4-13-82 1003
^{60}Co	<3(-7)	<3(-7)	<2(-7)	<2(-7)	<6(-7)	<2(-7)
^{65}Zn	<2(-7)	<1(-7)	<8(-8)	<2(-7)	<9(-7)	<2(-7)
^{91}Sr	<2(-6)	<8(-7)	<6(-7)	<3(-7)	<2(-6)	<3(-7)
^{91m}Y	<2(-6)	<9(-7)	<5(-7)	9 ± 4 (-7)	<6(-7)	<3(-6)
^{95}Nb	2 ± 1 (-7)	<6(-8)	<6(-8)	<6(-8)	<3(-7)	<7(-8)
^{99}Mo	<4(-6)	<2(-6)	<6(-7)	<7(-7)	<4(-6)	<2(-6)
^{110m}Ag	<7(-8)	*	8 ± 2 (-8)	<2(-8)	<4(-7)	<8(-8)
^{132}Te	<5(-7)	<2(-7)	<3(-7)	<2(-7)	<7(-7)	<2(-7)
^{139}Ba	<5(-6)	<8(-6)	3 ± 1 (-6)	<5(-6)	<7(-6)	<2(-5)
^{140}Ba	4 ± 1 (-7)	<3(-7)	3 ± 1 (-7)	<4(-7)	<6(-7)	<3(-7)
^{140}La	<5(-7)	<5(-7)	2.6 ± 0.9 (-7)	<2(-7)	<4(-7)	<3(-7)
^{141}Ce	<3(-7)	<2(-7)	<2(-7)	<2(-7)	<3(-6)	<2(-7)
^{239}Np	<2(-6)	<2(-6)	<5(-7)	<7(-7)	<2(-6)	<7(-7)

* Radionuclide not measured.

Table B.3-50 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-20-82 1145	4-29-82 0850	4-29-82 1310
^{84}Br	<6(-6)	<7(-7)	<2(-5)
^{131}I	<1(-7)	8.6 ± 0.8 (-7)	9.3 ± 0.9 (-7)
^{132}I	<3(-7)	<2(-7)	<5(-7)
^{133}I	3.4 ± 0.9 (-7)	<1(-7)	<2(-7)
^{134}I	<2(-6)	<3(-7)	<2(-6)
^{135}I	<2(-6)	<4(-7)	<7(-7)
^{88}Rb	<2(-4)	<4(-6)	*
^{89}Rb	<2(-4)	<2(-6)	*
^{134}Cs	4 ± 2 (-7)	<2(-7)	<2(-7)
^{136}Cs	<9(-8)	<1(-7)	<2(-7)
^{137}Cs	1.5 ± 0.5 (-7)	<2(-7)	<2(-7)
^{138}Cs	2.3 ± 0.3 (-5)	<4(-7)	<8(-6)
^{139}Cs	*	<4(-5)	*
^{24}Na	<2(-7)	<1(-7)	<1(-7)
^{51}Cr	<7(-7)	<2(-6)	<2(-6)
^{54}Mn	<8(-8)	<2(-7)	<2(-7)
^{59}Fe	<2(-7)	<2(-7)	<3(-7)
^{58}Co	<9(-8)	<9(-8)	<2(-7)

Table B.3-50 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-20-82 1145	4-29-82 0850	4-29-82 1310
^{60}Co	<2(-7)	<3(-7)	<4(-7)
^{65}Zn	<2(-7)	<2(-7)	<4(-7)
^{91}Sr	<7(-7)	<4(-7)	<6(-7)
^{91m}Y	9 ± 4 (-7)	<2(-7)	<2(-6)
^{95}Nb	<6(-8)	<8(-8)	<1(-7)
^{99}Mo	<1(-6)	<6(-7)	<2(-6)
^{110m}Ag	<4(-8)	<9(-8)	<2(-7)
^{132}Te	<2(-7)	<2(-7)	<2(-7)
^{139}Ba	<6(-6)	<6(-7)	<3(-6)
^{140}Ba	<3(-7)	<4(-7)	<4(-7)
^{140}La	<2(-7)	<2(-7)	<3(-7)
^{141}Ce	<2(-7)	<2(-7)	<3(-7)
^{239}NP	<7(-7)	<4(-7)	<6(-7)

* Radionuclide not measured.

Table B.3-51
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-21-82 0935	3-25-82 1010	3-28-82 1501	4-29-82 0850	4-29-82 1310
^{84}Br	<2(-6)	<7(-6)	<6(-6)	<2(-6)	<7(-7)
^{131}I	<2(-7)	<2(-7)	<2(-7)	7.2 ± 0.9 (-7)	7.3 ± 0.7 (-7)
^{132}I	<3(-7)	<5(-7)	<6(-7)	3.0 ± 0.7 (-7)	1.8 ± 0.6 (-7)
^{133}I	<7(-7)	<6(-7)	<4(-7)	<3(-7)	<2(-7)
^{134}I	<5(-7)	<2(-6)	<3(-6)	<7(-7)	<2(-7)
^{135}I	<3(-6)	<2(-6)	<2(-6)	<5(-7)	<5(-7)
^{88}Rb	<3(-5)	<3(-4)	<4(-4)	<2(-5)	<3(-6)
^{89}Rb	<5(-6)	<6(-5)	<2(-4)	<5(-6)	<2(-6)
^{134}Cs	<1(-7)	<9(-8)	<2(-7)	<2(-7)	<2(-7)
^{136}Cs	<2(-7)	<7(-8)	<8(-8)	<2(-7)	<2(-7)
^{137}Cs	<1(-7)	<8(-8)	<2(-7)	<2(-7)	<3(-7)
^{138}Cs	<3(-5)	5.5 ± 0.4 (-5)	7.9 ± 0.5 (-5)	<8(-7)	<5(-7)
^{139}Cs	<5(-4)	*	*	<3(-4)	<3(-5)
^{24}Na	<5(-7)	<2(-7)	<3(-7)	<2(-7)	<5(-8)
^{51}Cr	<1(-6)	<5(-7)	<9(-7)	<2(-6)	<2(-6)
^{54}Mn	<9(-8)	<7(-8)	<2(-7)	<2(-7)	<2(-7)
^{59}Fe	<3(-7)	<2(-7)	<3(-7)	<2(-7)	<3(-7)
^{58}Co	<2(-7)	<7(8)	<2(-7)	<3(-7)	<3(-7)

Table B.3-51 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	3-21-82 0935	3-25-82 1010	3-28-82 1501	4-29-82 0850	4-29-82 1310
^{60}Co	<2(-7)	<2(-7)	<3(-7)	<4(-7)	<4(-7)
^{65}Zn	<3(-7)	<2(-7)	<2(-7)	<3(-7)	<2(-7)
^{91}Sr	<9(-7)	<7(-7)	<8(-7)	<5(-7)	<3(-7)
^{91m}Y	<8(-7)	<2(-6)	<2(-6)	<4(-7)	<2(-7)
^{95}Nb	<1(-7)	<6(-8)	<2(-7)	<7(-8)	<2(-7)
^{99}Mo	<2(-6)	<3(-6)	<6(-7)	<2(-6)	<7(-7)
^{110m}Ag	<8(-8)	<6(-8)	<2(-7)	<2(-7)	<2(-7)
^{132}Te	<5(-7)	<2(-7)	<3(-7)	<2(-7)	<1(-7)
^{139}Ba	<6(-6)	<6(-6)	<5(-6)	<2(-6)	<8(-7)
^{140}Ba	<4(-7)	<4(-7)	<4(-7)	<6(-7)	<6(-7)
^{140}La	<7(-7)	<4(-7)	<3(-7)	<2(-7)	<2(-7)
^{141}Ce	<3(-7)	<3(-7)	<3(-7)	<3(-7)	<3(-7)
^{239}Np	<4(-6)	<1(-6)	<7(-7)	<7(-7)	<7(-7)

* Radionuclide not measured.

Table B.3-52
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "C" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 0850	Date and Time 4-29-82 1310
^{84}Br	<2(-6)	<2(-6)
^{131}I	1.10 ± 0.04(-5)	1.21 ± 0.05(-5)
^{132}I	8 ± 2 (-7)	7 ± 1 (-7)
^{133}I	<7(-7)	<3(-7)
^{134}I	<1(-6)	<3(-7)
^{135}I	<1(-6)	<8(-7)
^{88}Rb	<9(-6)	<2(-6)
^{89}Rb	<4(-6)	<2(-6)
^{134}Cs	<3(-7)	<2(-7)
^{136}Cs	<4(-7)	<4(-7)
^{137}Cs	<4(-7)	<5(-7)
^{138}Cs	<8(-7)	<3(-7)
^{139}Cs	<6(-5)	<2(-5)
^{24}Na	<4(-7)	<2(-7)
^{51}Cr	<3(-6)	<3(-6)
^{54}Mn	<3(-7)	<5(-7)
^{56}Mn	<7(-7)	<1(-6)
^{59}Fe	<2(-6)	<5(-7)

Table B.3-52 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "C" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 0850	4-29-82 1310
^{57}Co	<3(-7)	<2(-7)
^{58}Co	<5(-7)	<2(-7)
^{60}Co	<2(-6)	<4(-7)
^{65}Zn	<7(-7)	<6(-7)
^{91}Sr	<2(-6)	<8(-7)
^{91m}Y	<5(-7)	<2(-7)
^{93}Y	<4(-6)	<3(-6)
^{95}Zr	<3(-7)	<4(-7)
^{95}Nb	<4(-7)	<4(-7)
^{99}Mo	<2(-6)	<3(-6)
^{103}Ru	<3(-7)	<2(-7)
^{106}RuD	<3(-6)	<3(-6)
^{110m}Ag	<2(-7)	<2(-7)
^{124}Sb	<6(-7)	<6(-7)
^{125}Sb	<9(-7)	<6(-7)
^{129m}Te	<7(-6)	<3(-6)
^{129}Te	<7(-6)	<4(-6)
^{131m}Te	<2(-6)	<2(-6)
^{131}Te	<6(-6)	<2(-6)
^{132}Te	<5(-7)	<3(-7)

Table B.3-52 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "C" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-29-82 0850	Date and Time 4-29-82 1310
^{139}Ba	<2(-6)	<9(-7)
^{140}Ba	<9(-7)	<6(-7)
^{140}La	<3(-7)	<2(-7)
^{141}Ce	<7(-7)	<8(-7)
^{143}Ce	<5(-7)	<4(-7)
^{144}Ce	<3(-6)	<2(-6)
^{152}Eu	<2(-6)	<5(-7)
^{154}Eu	<8(-7)	<6(-7)
^{155}Eu	<2(-6)	<1(-6)
^{187}W	<2(-6)	<5(-7)
^{239}Np	<2(-6)	<8(-7)

Table B.3-53
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-20-82 1024	4-3-82 1242	4-8-82 0852	4-13-82 1005	4-20-82 1145
^{84}Br	<2(-6)	<2(-5)	<3(-6)	<2(-4)	<5(-6)
^{131}I	<1(-7)	<2(-7)	<5(-7)	<2(-7)	<8(-8)
^{132}I	6 ± 2 (-7)	<5(-7)	<5(-7)	7 ± 3 (-7)	<4(-7)
^{133}I	<2(-7)	<2(-7)	<4(-7)	<4(-7)	<4(-7)
^{134}I	<5(-7)	<2(-6)	<1(-6)	<5(-6)	<1(-6)
^{135}I	<1(-6)	<1(-6)	<2(-6)	<1(-6)	<1(-6)
^{88}Rb	1.4 ± 0.4 (-5)	<2(-3)	<2(-4)	*	<2(-4)
^{89}Rb	2.4 ± 0.9 (-6)	*	<4(-5)	*	<2(-4)
^{134}Cs	<8(-8)	<8(-8)	<3(-7)	<8(-8)	<7(-8)
^{136}Cs	<8(-8)	<8(-8)	<3(-7)	<9(-8)	<7(-8)
^{137}Cs	<2(-7)	<9(-8)	<4(-7)	<2(-7)	<9(-8)
^{138}Cs	<2(-5)	5.6 ± 0.4 (-5)	2.3 ± 0.2 (-5)	<2(-4)	1.8 ± 0.2 (-5)
^{139}Cs	<6(-5)	*	<4(-3)	*	*
^{24}Na	<9(-8)	<2(-7)	<2(-7)	<3(-7)	<2(-7)
^{51}Cr	<9(-7)	<7(-7)	<4(-6)	1.4 ± 0.3 (-6)	1.5 ± 0.3 (-6)
^{54}Mn	<4(-7)	<8(-8)	<3(-7)	<1(-7)	<9(-8)
^{59}Fe	<2(-7)	<1(-7)	<7(-7)	<2(-7)	<1(-7)
^{58}Co	<6(-8)	<6(-8)	<3(-7)	<8(-8)	<6(-8)

Table B.3-53 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	3-20-82 1024	4-3-82 1242	4-8-82 0852	4-13-82 1005	4-20-82 1145
^{60}Co	<2(-7)	<2(-7)	6 ± 2 (-7)	<2(-7)	<2(-7)
^{65}Zn	<2(-7)	<2(-7)	<9(-7)	<2(-7)	<2(-7)
^{91}Sr	<6(-7)	<4(-7)	<8(-7)	<8(-7)	<8(-7)
^{91m}Y	<3(-7)	<2(-6)	<2(-6)	<5(-6)	<2(-6)
^{95}Nb	<1(-7)	<8(-8)	<3(-7)	<7(-8)	<7(-8)
^{99}Mo	<2(-6)	<2(-6)	<2(-6)	<1(-6)	<2(-6)
^{110m}Ag	<7(-8)	<6(-8)	<2(-7)	<7(-8)	<7(-8)
^{132}Te	<2(-7)	<2(-7)	<7(-7)	<3(-7)	<2(-7)
^{139}Ba	<3(-6)	<4(-6)	<6(-6)	<2(-5)	<7(-6)
^{140}Ba	<4(-7)	<3(-7)	<6(-7)	<3(-7)	<3(-7)
^{140}La	<2(-7)	<3(-7)	<5(-7)	<2(-7)	<3(-7)
^{141}Ce	<2(-7)	<2(-7)	<2(-6)	<2(-7)	<2(-7)
^{239}Np	<9(-7)	<8(-7)	<2(-6)	<9(-7)	<8(-7)

* Radionuclide not measured.

Table B.3-54
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-27-82
Time: 1030

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<3(-6)
^{131}I	<4(-8)	<1(-7)	a	<2(-7)
^{132}I	*	*	*	<2(-7)
^{133}I	<5(-7)	<1(-6)	a	<9(-8)
^{134}I	*	*	*	<5(-7)
^{135}I	*	<9(-5)	a, *	<2(-7)
^{134}Cs	<5(-8)	<2(-7)	a	<2(-7)
^{137}Cs	<6(-8)	<2(-7)	a	<9(-8)
^{24}Na	<6(-7)	<4(-7)	a	<5(-8)
^{51}Cr	<2(-7)	<6(-7)	a	<5(-7)
^{54}Mn	<9(-8)	<2(-7)	a	<8(-8)
^{59}Fe	<6(-8)	<2(-7)	a	<9(-8)
^{58}Co	<4(-8)	<9(-8)	a	<6(-8)
^{60}Co	<2(-7)	2.2 ± 0.1 (-6)	2.3 ± 0.1 (-6)	<3(-7)
^{65}Zn	<8(-8)	<2(-7)	a	<2(-7)
^{91}Sr	<3(-5)	<2(-5)	a	<2(-7)
^{95}Zr	<6(-8)	<2(-7)	a	<1(-7)
^{95}Nb	<4(-8)	<8(-8)	a	<6(-8)

Table B.3-54 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-27-82
Time: 1030

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{99}Mo	<6(-7)	<2(-6)	a	<5(-7)
^{132}Te	<4(-8)	<1(-7)	a	<8(-8)
^{139}Ba	*	*	*	<6(-7)
^{140}Ba	<2(-7)	<4(-7)	a	<3(-7)
^{239}Np	<2(-7)	<8(-7)	a	<2(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-54 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 1110

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<4(-6)
^{131}I	<1(-8)	<1(-7)	a	<9(-8)
^{132}I	<3(-6)	<9(-6)	a, *	<2(-7)
^{133}I	<2(-8)	<2(-7)	a	<8(-8)
^{134}I	*	*	*	<4(-7)
^{135}I	<4(-7)	<1(-6)	a, *	<3(-7)
^{134}Cs	<2(-8)	<9(-8)	a	<1(-7)
^{137}Cs	<2(-8)	<1(-7)	a	<2(-7)
^{24}Na	<3(-8)	<2(-7)	a, *	<6(-8)
^{51}Cr	<2(-7)	<6(-7)	a	<7(-7)
^{54}Mn	1.7 ± 0.7 (-8)	<9(-8)	a	<2(-7)
^{59}Fe	<2(-8)	<2(-7)	a	<2(-7)
^{58}Co	<3(-8)	7 ± 4 (-8)	a	<8(-8)
^{60}Co	6 ± 2 (-8)	<3(-7)	a	<2(-7)
^{65}Zn	<2(-8)	<2(-7)	a	<2(-7)
^{91}Sr	<2(-7)	<6(-7)	a, *	<3(-7)
^{95}Zr	<2(-8)	<2(-7)	a	<2(-7)
^{95}Nb	<2(-8)	<9(-8)	a	<2(-7)

Table 8.3-54 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 1110

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{99}Mo	<2(-7)	<1(-6)	a	<1(-6)
^{132}Te	<2(-8)	<2(-7)	a	<7(-8)
^{139}Ba	*	*	*	<8(-7)
^{140}Ba	<5(-8)	<3(-7)	a	<5(-7)
^{239}Np	<4(-8)	<3(-7)	a	<3(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-55
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-21-82
Time: 0945

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<3(-8)	<2(-7)	a	1.4 ± 0.6 (-7)
^{132}I	<5(-7)	*	a, *	<4(-7)
^{133}I	<9(-8)	<2(-7)	a	<5(-7)
^{135}I	<7(-7)	<7(-6)	a	<9(-7)
^{134}Cs	<5(-8)	<8(-8)	a	<5(-8)
^{136}Cs	<6(-8)	<2(-7)	a	<2(-7)
^{137}Cs	<1(-7)	<2(-7)	a	<2(-7)
^{24}Na	<7(-8)	<4(-7)	a	<3(-7)
^{59}Fe	<2(-7)	<2(-7)	a	1.5 ± 0.4 (-7)
^{58}Co	<3(-8)	<8(-8)	a	<4(-8)
^{60}Co	<1(-7)	<2(-7)	a	<3(-7)
^{91}Sr	<2(-7)	<2(-6)	a	<2(-6)
^{99}Mo	*	*	*	*
^{132}Te	*	*	*	*
^{139}Ba	<2(-5)	*	a, *	<5(-6)

Table B.3-55 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-21-82
Time: 0945

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<2(-7)	<5(-7)	a	4 ± 1 (-7)
^{239}Np	<1(-7)	<9(-7)	a	<2(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-55 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1232

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-5)
^{131}I	<2(-8)	<8(-8)	a	<2(-7)
^{132}I	<3(-7)	<8(-7)	a	<3(-7)
^{133}I	<3(-8)	<3(-8)	a	<2(-7)
^{134}I	*	<8(-6)	a, *	<2(-6)
^{135}I	<7(-8)	<4(-7)	a	<5(-7)
^{134}Cs	<2(-8)	<2(-7)	a	<2(-7)
^{137}Cs	<2(-8)	<2(-7)	a	1.9 ± 0.4 (-7)
^{24}Na	<3(-8)	<9(-8)	a	<2(-7)
^{51}Cr	<2(-7)	<2(-6)	a	<6(-7)
^{54}Mn	<2(-8)	<2(-7)	a	<1(-7)
^{59}Fe	<2(-8)	<2(-7)	a	<2(-7)
^{58}Co	<8(-9)	<6(-8)	a	<6(-8)
^{60}Co	<2(-8)	<2(-7)	a	<2(-7)
^{91}Sr	6 ± 3 (-8)	<3(-7)	a	<3(-7)
^{99}Mo	<9(-8)	<1(-6)	a	<7(-7)
^{132}Te	<2(-8)	<2(-7)	a	<2(-7)
^{139}Ba	<4(-6)	<2(-5)	a	<5(-6)

Table B.3-55 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1232

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<3(-8)	<3(-7)	a	<4(-7)
^{239}Np	<4(-8)	<6(-7)	a	<7(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-55 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0847

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<2(-5)	<8(-6)	a	<3(-6)
^{131}I	<2(-8)	<3(-7)	a	<4(-7)
^{132}I	<8(-8)	<5(-7)	a	<5(-7)
^{133}I	<4(-8)	2.4 ± 0.8 (-7)	a	<6(-7)
^{134}I	<1(-6)	<2(-6)	a	<2(-6)
^{135}I	<2(-6)	<2(-6)	a	<3(-6)
^{134}Cs	2.2 ± 0.9 (-8)	<3(-7)	a	<5(-7)
^{137}Cs	<4(-8)	<4(-7)	a	<5(-7)
^{24}Na	<4(-8)	<3(-7)	a	<4(-7)
^{51}Cr	<3(-7)	<2(-6)	a	<3(-6)
^{54}Mn	<2(-8)	<3(-7)	a	<5(-7)
^{59}Fe	<5(-8)	<4(-7)	a	<9(-7)
^{58}Co	<2(-8)	<2(-7)	a	<3(-7)
^{60}Co	<4(-8)	<3(-7)	a	<6(-7)
^{91}Sr	<2(-7)	<8(-7)	a	<2(-6)
^{99}Mo	<2(-7)	<8(-7)	a	<4(-6)
^{132}Te	<3(-8)	<5(-7)	a	<7(-7)
^{139}Ba	<7(-7)	<6(-6)	a	<7(-6)

Table B.3-55 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0847

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<1(-7)	<5(-7)	a	<6(-7)
^{239}Np	<2(-7)	<2(-6)	a	<2(-6)

a. Sum not calculated due to large less-than values.

Table B.3-56
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-21-82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<2(-8)	<2(-7)	a	<2(-7)
^{132}I	<6(-7)	<2(-6)	a	<3(-7)
^{133}I	<4(-8)	2.3 ± 0.9 (-7)	a	<7(-7)
^{134}I	*	<2(-4)	a, *	<5(-7)
^{135}I	<5(-7)	<2(-6)	a	<3(-6)
^{134}Cs	<2(-8)	<2(-7)	a	<1(-7)
^{137}Cs	<5(-8)	<2(-7)	a	<1(-7)
^{24}Na	<7(-8)	<3(-7)	a	<5(-7)
^{51}Cr	<3(-7)	<2(-6)	a	<1(-6)
^{54}Mn	<5(-8)	<2(-7)	a	<9(-8)
^{59}Fe	<8(-8)	<4(-7)	a	<3(-7)
^{58}Co	<4(-8)	<2(-7)	a	<2(-7)
^{60}Co	<6(-8)	<5(-7)	a	<2(-7)
^{91}Sr	<3(-7)	<7(-7)	a	<9(-7)
^{99}Mo	*	*	*	*
^{132}Te	*	*	*	*
^{139}Ba	<9(-6)	<7(-5)	a	<6(-6)

Table B.3-56 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-21-82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<6(-8)	<8(-7)	a	<4(-7)
^{239}Np	<2(-7)	<2(-6)	a	<4(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-56 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DD "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0859

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	<8(-5)	a, *	<5(-5)
^{131}I	<3(-8)	1.15 ± 0.01(-5)	1.15 ± 0.01(-5)	1.07 ± 0.02(-5)
^{132}I	<9(-8)	4.9 ± 0.1 (-5)	4.9 ± 0.1 (-5)	4.8 ± 0.1 (-5)
^{133}I	8 ± 2 (-8)	7.72 ± 0.08(-5)	7.73 ± 0.08(-5)	7.2 ± 0.3 (-5)
^{134}I	<2(-6)	9.6 ± 0.5 (-5)	9.6 ± 0.5 (-5)	9.5 ± 0.3 (-5)
^{135}I	<3(-7)	1.01 ± 0.02(-4)	1.01 ± 0.02(-4)	1.01 ± 0.02(-4)
^{134}Cs	4 ± 1 (-8)	3.5 ± 0.4 (-7)	3.8 ± 0.4 (-7)	4.9 ± 0.3 (-7)
^{137}Cs	1.0 ± 0.2 (-7)	6.1 ± 0.5 (-7)	7.1 ± 0.5 (-7)	5.8 ± 0.7 (-7)
^{24}Na	1.05 ± 0.05(-6)	9.6 + 0.6 (-5)	9.7 ± 0.6 (-5)	9.3 ± 0.7 (-5)
^{51}Cr	4.3 ± 0.3 (-6)	5.2 ± 0.5 (-6)	9.5 ± 0.5 (-6)	8.8 ± 0.4 (-6)
^{54}Mn	<4(-8)	<7(-8)	a	1.4 ± 0.5 (-7)
^{59}Fe	<8(-8)	1.1 ± 0.5 (-7)	a	<2(-7)
^{58}Co	<4(-8)	<2(-7)	a	2.5 ± 0.4 (-7)
^{60}Co	<5(-8)	2.8 ± 0.5 (-7)	2.8 ± 0.7 (-7)[b]	4.9 + 0.5 (-7)
^{91}Sr	<2(-7)	3.6 ± 0.9 (-6)	3.6 ± 0.9 (-6)[b]	9 ± 2 (-6)
^{99}Mo	<2(-7)	3 ± 1 (-6)	3 ± 1 (-6)	6 ± 2 (-6)
^{132}Te	3 ± 1 (-8)	<6(-7)	a	<4(-7)
^{139}Ba	6.6 ± 0.7 (-6)	5.6 ± 0.5 (-5)	6.3 ± 0.5 (-5)[b]	1.28 ± 0.07(-4)

Table B.3-56 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DD "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0859

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<8(-8)	<1(-6)	a	1.2 ± 0.2 (-6)
^{239}Np	<2(-7)	2.97 ± 0.07(-5)	2.97 ± 0.07(-5)	3.00 ± 0.08(-5)

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-57
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-20-82
Time: 1024

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<2(-6)	<8(-6)	*	*
^{131}I	<2(-8)	<3(-7)	a	<1(-7)
^{132}I	<3(-8)	<3(-7)	a	6 ± 2 (-7)
^{133}I	<3(-8)	<8(-7)	a	<2(-7)
^{134}I	<2(-7)	<2(-6)	a	<5(-7)
^{135}I	<7(-8)	<2(-6)	a	<1(-6)
^{134}Cs	<2(-8)	<2(-7)	a	<8(-8)
^{136}Cs	<3(-8)	<4(-7)	a	<8(-8)
^{137}Cs	<2(-8)	<5(-7)	a	<2(-7)
^{138}Cs	<2(-6)	2.5 ± 0.4 (-5)	a	<2(-5)
^{24}Na	<2(-8)	<5(-7)	a	<9(-8)
^{51}Cr	<2(-7)	<2(-6)	a	<9(-7)
^{60}Co	<4(-8)	<6(-7)	a	<2(-7)
^{91}Sr	<4(-8)	<7(-7)	a	<6(-7)
^{139}Ba	<2(-7)	<7(-6)	a	<3(-6)

Table B.3-57 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 3-20-82
Time: 1024

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<4(-8)	<1(-6)	a	<4(-7)
^{239}Np	<4(-8)	<2(-6)	a	<9(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-57 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET FILTERED SAMPLES
(microcuries/gram)

	Date: 4-3-82 Time: 1242			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<9(-9)	<9(-8)	a	<2(-7)
^{132}I	<5(-7)	<6(-6)	a	<5(-7)
^{133}I	<2(-8)	1.1 ± 0.5 (-7)	a	1.7 ± 0.8 (-7)
^{134}I	*	*	*	<2(-6)
^{135}I	<2(-7)	<9(-7)	a	<1(-6)
^{134}Cs	<8(-9)	<2(-7)	a	<8(-8)
^{137}Cs	<2(-8)	<9(-8)	a	<9(-8)
^{24}Na	<2(-8)	<2(-7)	a	<2(-7)
^{51}Cr	1.4 ± 0.4 (-7)	<7(-7)	a	<7(-7)
^{54}Mn	<2(-8)	<8(-8)	a	<8(-8)
^{59}Fe	<2(-8)	<8(-8)	a	<1(-7)
^{58}Co	<8(-9)	1.1 ± 0.5 (-7)	1.1 ± 0.5 (-7)[b]	<6(-8)
^{60}Co	<3(-8)	<2(-7)	a	<2(-7)
^{91}Sr	<7(-8)	<8(-7)	a	<4(-7)
^{99}Mo	<7(-8)	<5(-7)	a	<2(-6)
^{132}Te	<2(-8)	<2(-7)	a	<2(-7)
^{139}Ba	<4(-5)	*	a, *	<4(-6)

Table B.3-57 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-3-82
Time: 1242

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{140}Ba	<3(-8)	<2(-7)	a	<3(-7)
^{239}Np	<4(-8)	<4(-7)	a	<8(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-57 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-8-82
Time: 0851

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<2(-5)	<9(-6)	a	<3(-6)
^{131}I	<4(-8)	<2(-7)	a	<5(-7)
^{132}I	<8(-8)	<7(-7)	a	<5(-7)
^{133}I	<3(-8)	<4(-7)	a	<4(-7)
^{134}I	<8(-7)	<1(-6)	a	<1(-6)
^{135}I	<2(-7)	<2(-6)	a	<2(-6)
^{134}Cs	<4(-8)	<2(-7)	a	<3(-7)
^{137}Cs	<4(-8)	<4(-7)	a	<4(-7)
^{138}Cs	<2(-5)	2.5 ± 0.5 (-5)	a	2.3 ± 0.2 (-5)
^{24}Na	<5(-8)	<3(-7)	a	<2(-7)
^{51}Cr	2.3 ± 0.9 (-7)	<2(-6)	a	<4(-6)
^{54}Mn	<5(-8)	<5(-7)	a	3 ± 1 (-7)
^{59}Fe	<8(-8)	<4(-7)	a	<7(-7)
^{58}Co	<4(-8)	<2(-7)	a	<3(-7)
^{60}Co	<8(-8)	<4(-7)	a	6 ± 2 (-7)
^{91}Sr	<1(-7)	<4(-7)	a	<8(-7)
^{99}Mo	<3(-7)	<1(-6)	a	<2(-6)
^{132}Te	<3(-8)	<4(-7)	a	<7(-7)

Table B.3-57 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET FILTERED SAMPLES
(microcuries/gram)

	Date: 4-8-82 Time: 0851			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	<2(-6)	<5(-6)	a	<6(-6)
^{140}Ba	<2(-7)	<7(-7)	a	<6(-7)
^{239}Np	<2(-7)	<9(-7)	a	<2(-6)

a. Sum not calculated due to large less-than values.

Table B.3-58
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE FILTER DEMINERALIZER INLET
(microcuries/gram)

	Date and Time				
Nuclide	3-23-82 1185	3-25-82 1015	3-26-82 0757	4-8-82 0904	4-20-82 1200
Cl-38	9.2 ± 0.8 (-5)	1.6 ± 0.2 (-4)	<5(-5)	<3(-5)	<2(-5)
Ni-65	<2(-5)	<2(-5)	<3(-5)	<2(-5)	<2(-5)
Sr-92	2.40 ± 0.03(-4)	3.70 ± 0.09(-4)	3.1 ± 0.3 (-5)	2.29 ± 0.05(-4)	2.41 ± 0.06(-4)
Y-92	6 ± 1 (-5)	1.4 ± 0.2 (-4)	<3(-5)	3 ± 1 (-5)	<2(-4)
Nb-95m	7.0 ± 0.6 (-5)	6.1 ± 0.5 (-5)	<3(-5)	7.8 ± 0.7 (-5)	3.9 ± 0.6 (-5)
Tc-99m	7.90 ± 0.08(-4)	1.15 ± 0.05(-3)	7.2 ± 0.3 (-5)	9.3 ± 0.2 (-4)	9.2 ± 0.2 (-4)
Tc-101	6.3 ± 0.3 (-4)	9 ± 1 (-4)	<8(-5)	9.5 ± 0.2 (-4)	7 ± 1 (-4)
Tc-104	4.8 ± 0.1 (-4)	7.2 ± 0.3 (-4)	<5(-5)	7.9 ± 0.2 (-4)	5.7 ± 0.3 (-4)
Ba-141	4.4 ± 0.4 (-4)	7 ± 1 (-4)	<8(-5)	5.0 + 0.7 (-4)	3.2 ± 0.8 (-4)
Ba-142	<6(-4)	<2(-3)	<5(-4)	2.3 ± 0.7 (-4)	<3(-3)
La-142	<3(-5)	<6(-5)	<8(-6)	4 ± 2 (-5)	<4(-5)

Table B.3-59
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE_FILTER_DEMINERALIZER_OUTLET
(microcuries/gram)

	Date and Time			
Nuclide	3-20-82 1027	3-25-82 1002	4-8-82 0854	4-20-82 1155
Cl-38	8 ± 3 (-6)	7 ± 1 (-5)	<3(-5)	<2(-5)
Ni-65	<6(-6)	<9(-6)	<3(-6)	<5(-6)
Sr-92	1.4 ± 0.1 (-5)	2.6 ± 0.2 (-5)	2.3 ± 0.7 (-6)	1.5 ± 0.1 (-5)
Y-92	<2(-5)	<3(-5)	<1(-5)	<2(-5)
Nb-95m	<9(-6)	<7(-6)	<3(-6)	<5(-6)
Tc-99m	3.29 ± 0.07(-5)	6.6 ± 0.1 (-5)	1.40 ± 0.06(-5)	2.26 ± 0.08(-5)
Tc-101	1.8 ± 0.3 (-5)	<1(-4)	<9(-5)	<2(-4)
Tc-104	6 ± 2 (-6)	4 ± 2 (-5)	4 ± 1 (-5)	<9(-5)
Ba-141	9.0 ± 0.9 (-5)	<8(-5)	<8(-5)	<9(-5)
Ba-142	<6(-5)	<8(-4)	<2(-3)	<2(-3)
La-142	<2(-5)	<6(-6)	<4(-6)	<7(-6)

Table B.3-60
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

	Date and Time		
Nuclide	3-23-82 1140	3-25-82 1012	4-20-82 1150
Cl-38	3.7 ± 0.5 (-5)	1.3 ± 0.3 (-4)	<2(-5)
Ni-65	<5(-6)	<2(-5)	<7(-6)
Sr-92	1.7 ± 0.1 (-5)	2.4 ± 0.1 (-5)	1.3 ± 0.1 (-5)
Y-92	<2(-5)	<3(-5)	<2(-5)
Nb-95m	<2(-5)	<5(-6)	<1(-5)
Tc-99m	4.6 ± 0.1 (-5)	6.5 ± 0.1 (-5)	4.4 ± 0.1 (-5)
Tc-101	<5(-5)	<5(-4)	<7(-5)
Tc-104	2.9 ± 0.7 (-5)	<2(-4)	4 ± 1 (-5)
Ba-141	<3(-5)	<4(-4)	<6(-5)
Ba-142	<2(-4)	*	<5(-4)
La-142	<6(-6)	<6(-6)	<4(-6)

* Radionuclide not measured.

Table B.3-61
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE FILTER DEMINERALIZER "D" OUTLET
(microcuries/gram)

	Date and Time	
Nuclide	3-23-82 1145	4-20-82 1150
Cl-38	<2(-5)	<9(-6)
Ni-65	<6(-6)	<5(-6)
Sr-92	6.7 ± 0.6 (-6)	5.3 ± 0.6 (-6)
Y-92	<8(-6)	<9(-6)
Nb-95m	<4(-6)	<6(-6)
Tc-99m	3.3 ± 0.4 (-6)	2.5 ± 0.8 (-6)
Tc-101	<8(-5)	<4(-5)
Tc-104	<3(-5)	<3(-5)
Ba-141	<5(-5)	<6(-5)
Ba-142	<2(-3)	<5(-4)
La-142	<3(-6)	<4(-6)

Table B.3-62
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE DEEPBED DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-26-82 0757	Date and Time 4-20-82 1150
Cl-38	<5(-6)	<5(-6)
Ni-65	<3(-6)	<3(-6)
Sr-92	<8(-7)	<2(-6)
Y-92	<2(-6)	<6(-6)
Nb-95m	<4(-6)	<3(-6)
Tc-99m	<9(-7)	<2(-6)
Tc-101	<3(-5)	<6(-5)
Tc-104	2.6 ± 0.4 (-5)	<6(-5)
Ba-141	<2(-5)	<8(-5)
Ba-142	<3(-4)	<2(-3)
La-142	<2(-6)	<3(-6)

Table B.3-63
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE DEEPBED DEMINERALIZER "A" OUTLET
(microcuries/gram)

	Date and Time
Nuclide	4-8-82 0847
Cl-38	<4(-6)
Ni-65	<3(-6)
Sr-92	<6(-7)
Y-92	<4(-6)
Nb-95m	<6(-6)
Tc-99m	1.0 ± 0.4 (-6)
Tc-101	<3(-5)
Tc-104	2.5 ± 0.4 (-5)
Ba-141	<5(-5)
Ba-142	<4(-4)
La-142	<7(-7)

Table B.3-64
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE DEEPBED DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-25-82 0934
Cl-38	<7(-6)
Ni-65	<3(-6)
Sr-92	<2(-6)
Y-92	<4(-6)
Nb-95m	<3(-6)
Tc-99m	<8(-7)
Tc-101	<5(-5)
Tc-104	5.5 ± 0.8 (-5)
Ba-141	<6(-5)
Ba-142	<9(-4)
La-142	<9(-7)

Table B.3-65
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN CONDENSATE DEEPBED DEMINERALIZER "E" OUTLET
(microcuries/gram)

	Date and Time	
Nuclide	3-20-82 1024	4-8-82 0852
Cl-38	<2(-6)	<5(-6)
Ni-65	<3(-6)	<2(-6)
Sr-92	<5(-7)	<5(-7)
Y-92	<2(-6)	<4(-6)
Nb-95m	<4(-7)	<3(-6)
Tc-99m	<2(-6)	<2(-6)
Tc-101	<3(-6)	<6(-5)
Tc-104	<2(-6)	3.7 ± 0.6 (-5)
Ba-141	<8(-6)	<4(-5)
Ba-142	<3(-5)	<5(-4)
La-142	<7(-7)	<7(-7)

Table B.3-66
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 3-15-82 0825	3-25-82 1002	3-28-82 1452	4-3-82 1224	4-6-82 0937	4-8-82 0855
^{84}Br	d	<2	>1	>7	c	>16
^{131}I	7.00 ± 0.06(-1)	8.1 ± 0.3 (-1)	8.2 ± 0.1 (-1)	6.5 ± 0.1	3.6 ± 0.1	8.8 ± 0.2
^{132}I	1.1 ± 0.1 (1)	9.1 ± 0.1 (-1)	5.1 ± 0.2 (-1)	1.8 ± 0.5 (1)	9.1 ± 0.2	3.2 ± 0.2 (1)
^{133}I	2.7 ± 0.6	9.5 ± 0.6 (-1)	6.7 ± 0.2 (-1)	1.1 ± 0.3 (1)	4.80 ± 0.08	1.40 ± 0.06 (1)
^{134}I	d	9.2 ± 0.1 (-1)	3.89 ± 0.08(-1)	2.0 ± 0.7 (1)	1.13 ± 0.08 (1)	4.9 ± 0.3 (1)
^{135}I	7.4 ± 0.5	1.02 ± 0.01	<9(-1)	1.4 ± 0.4 (1)	7.2 ± 0.6	2.2 ± 0.1 (1)
^{88}Rb	d	c	c	>1	d	c
^{89}Rb	d	6.3 ± 0.6 (-1)	1.15 ± 0.04	c	d	>6
^{134}Cs	1.74 ± 0.02	<2(-1)	1.06 ± 0.05	1.2 ± 0.1	7.7 ± 0.9 (-1)	2.2 ± 0.4
^{136}Cs	1.66 ± 0.03	<3(-1)	1.0 ± 0.1	1.8 ± 0.4	1.5 ± 0.3	3.7 ± 0.8
^{137}Cs	1.68 ± 0.02	<6(-2)	1.10 ± 0.05	1.1 ± 0.1	6 ± 1 (-1)	2.2 ± 0.4
^{138}Cs	d	9.2 ± 0.3 (-1)	1.00 ± 0.03	4.5 ± 0.3	3.0 ± 0.4	1.01 ± 0.09 (1)
^{139}Cs	d	c	1.0 ± 0.2	d	d	d
^{24}Na	2.2 ± 0.6	9.0 ± 0.2 (-1)	6.5 ± 0.2 (-1)	2.70 ± 0.05	1.83 ± 0.03	4.9 ± 0.1
^{51}Cr	4 ± 2 (1)	3.6 ± 0.5 (-1)	7 ± 2 (-1)	4 ± 1 (1)	2.6 ± 0.6 (1)	2.8 ± 0.5 (1)
^{54}Mn	1.5 ± 0.4 (1)	<3	9 ± 1 (-1)	>4	2.7 ± 0.9	2.6 ± 0.8
^{59}Fe	>15	c	c	3 ± 2 (-1)	>1	c
^{58}Co	4.1 ± 0.7	1.3 ± 0.4 (-1)	6.1 ± 0.6 (-1)	5 ± 1	3.3 ± 0.5	7 ± 2
^{60}Co	4.5 ± 0.4	1.5 ± 0.5	7.0 ± 0.4 (-1)	6 ± 2	3.8 ± 0.7	8 ± 2

Table B.3-66 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time: 3-15-82 0825	3-25-82 1002	3-28-82 1452	4-3-82 1224	4-6-82 0937	4-8-82 0855
^{65}Zn	1.5 ± 0.9	<7(-2)	7 ± 2 (-1)	>1	>2	>2
^{91}Sr	>29	1.03 ± 0.04	3.7 ± 0.6 (-1)	2.8 ± 0.5 (1)	1.0 ± 0.2 (1)	6 ± 2 (1)
^{91m}Y	d	1.4 ± 0.6	c	c	c	c
^{95}Nb	c	c	c	>85	c	c
^{99}Mo	3.8 ± 0.7	c	<7	>7	>6	>3
^{110m}Ag	c	c	1.2 ± 0.4	c	c	c
^{132}Te	c	c	c	2 ± 1	c	c
^{139}Ba	>3	9.7 ± 0.1 (-1)	6.8 ± 0.3 (-1)	1.85 ± 0.09 (1)	1.06 ± 0.06 (1)	3.2 ± 0.2 (1)
^{140}Ba	1.0 ± 0.2 (1)	>15	5.9 ± 0.5 (-1)	1.0 ± 0.1 (1)	1.1 ± 0.3 (1)	4 ± 2 (1)
^{140}La	c	>2	>6	c	c	c
^{141}Ce	c	c	<6	c	>2	>1
^{239}Np	1.35 ± 0.03	9.5 ± 0.7 (-1)	8.6 ± 0.2 (-1)	2.7 ± 0.1	1.65 ± 0.09	8.7 ± 0.2 (-1)

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B:3-66 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time: 4-11-82 0919	4-13-82 1006	4-20-82 1155
^{84}Br	d	>8	1.1 ± 0.4
^{131}I	7.8 ± 0.2	5.4 ± 0.2	6.0 ± 0.9
^{132}I	3.2 ± 0.2 (1)	2.33 ± 0.03 (1)	1.57 ± 0.04 (1)
^{133}I	1.41 ± 0.03 (1)	9.9 ± 0.2	7.1 ± 0.2
^{134}I	>24	3.53 ± 0.08 (1)	2.19 ± 0.09 (1)
^{135}I	7.4 ± 0.2 (1)	1.50 ± 0.04 (1)	1.01 ± 0.04 (1)
^{88}Rb	d	c	c
^{89}Rb	d	2.2 ± 0.5	3 ± 1
^{134}Cs	>2	1.6 ± 0.2	<3
^{136}Cs	c	2.0 ± 0.2	<3
^{137}Cs	1.7 ± 0.3	1.5 ± 0.2	<2
^{138}Cs	d	6.2 ± 0.3	3.5 ± 0.2
^{139}Cs	d	d	c
^{24}Na	3.9 ± 0.2	3.2 ± 0.1	1.7 ± 0.3
^{51}Cr	2.3 ± 0.5 (1)	1.7 ± 0.1 (1)	1.1 ± 0.2 (1)
^{54}Mn	>3	>4	<3
^{59}Fe	c	<0.8	c
^{58}Co	3 ± 1	7 ± 3	<1.1(2)
^{60}Co	>5	3.6 ± 0.9	<4

Table B.3-66 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time: 4-11-82 0919	4-13-82 1006	4-20-82 1155
^{65}Zn	>2	>2	<3
^{91}Sr	4.0 ± 0.6 (1)	3.3 ± 0.3	1.3 ± 0.2 (1)
^{91m}Y	c	>3	c
^{95}Nb	c	c	c
^{99}Mo	>12	1.9 ± 0.8 (1)	>1
^{110m}Ag	c	c	c
^{132}Te	c	>17	c
^{139}Ba	1.5 ± 0.1 (1)	1.99 ± 0.05 (1)	9.1 ± 0.3
^{140}Ba	>9	1.6 ± 0.3 (1)	1.6 ± 0.6 (1)
^{140}La	<2	>13	c
^{141}Ce	c	>1	c
^{239}Np	2.9 ± 0.1	2.31 ± 0.04	1.8 ± 0.1

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-66 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 9-29-82 1110	10-4-82 1227	10-19-82 1446	10-20-82 1215
^{84}Br	d	d	d	d
^{131}I	c	8 ± 1	7.3 ± 0.5	5.4 ± 0.3
^{132}I	c	d	d	d
^{133}I	c	8.4 ± 0.3	7.4 ± 0.2	6.0 ± 0.2
^{134}I	d	d	d	d
^{135}I	c	1.1 ± 0.2 (1)	8.1 ± 0.1	7.5 ± 0.2
^{88}Rb	d	d	d	d
^{89}Rb	d	d	d	d
^{134}Cs	d	c	c	d
^{136}Cs	c	c	c	c
^{137}Cs	d	c	c	d
^{138}Cs	d	d	d	d
^{139}Cs	d	d	d	d
^{24}Na	c	2.0 ± 0.3	2.7 ± 0.2	1.0 ± 0.5 (-1)
^{51}Cr	c	c	>2	c
^{54}Mn	3.5 ± 0.3	5 ± 1	1.5 ± 0.1	8 ± 2 (-1)
^{59}Fe	>1	c	c	c
^{58}Co	1.4 ± 0.2	d	0.5 ± 0.1	d
^{60}Co	1.7 ± 0.1	0.5 ± 0.1	9.0 ± 0.2 (-1)	2.0 ± 0.3 (-1)

Table B.3-66 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 9-29-82 1110	10-4-82 1227	10-19-82 1446	10-20-82 1215
^{65}Zn	>2	c	>1	c
^{91}Sr	c	d	1.5 ± 0.1 (1)	1.0 ± 0.1 (1)
^{91m}Y	d	d	d	d
^{93}Y	c	c	c	c
^{95}Zr	c	c	c	c
^{95}Nb	c	c	c	c
^{99}Mo	c	c	>3(1)	>1(1)
^{110m}Ag	c	c	c	c
^{132}Te	c	c	c	c
^{139}Ba	d	d	>2	<4(2)
^{140}Ba	c	>1	>1	>2
^{140}LA	c	d	c	d
^{141}Ce	c	c	c	c
^{239}Np	c	1.6 ± 0.1	1.6 ± 0.2	d

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-67
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-29-82 1305
^{84}Br	c
^{131}I	1.82 ± 0.05
^{132}I	3.22 ± 0.06
^{133}I	1.7 ± 0.6
^{134}I	c
^{135}I	c
^{88}Rb	d
^{89}Rb	d
^{134}Cs	8.6 ± 0.1 (-1)
^{136}Cs	8.7 ± 0.2 (-1)
^{137}Cs	8.6 ± 0.3 (-1)
^{138}Cs	c
^{139}Cs	d
^{24}Na	c
^{51}Cr	>11
^{54}Mn	8.9 ± 0.2 (-1)
^{59}Fe	>11
^{58}Co	6.40 ± 0.08(-1)

Table B.3-67 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-29-82 1305
^{60}Co	7.3 ± 0.2 (-1)
^{65}Zn	9.0 ± 0.5 (-1)
^{91}Sr	c
^{91m}Y	c
^{95}Nb	c
^{99}Mo	c
^{110m}Ag	c
^{132}Te	c
^{139}Ba	c
^{140}Ba	5 ± 1 (-1)
^{140}La	>3
^{141}Ce	c
^{239}Np	7.7 ± 0.3 (-1)

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-68
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time					
	3-23-82 1135	3-25-82 1012	4-3-82 1206	4-8-82 0900	4-13-82 1009	4-20-82 1150
^{84}Br	4 ± 2	c	>21	>3	>21	>3
^{131}I	1.65 ± 0.03	9.5 ± 0.2 (-1)	1.22 ± 0.03 (1)	3.37 ± 0.07	3.29 ± 0.04	4.1 ± 0.1
^{132}I	5.4 ± 0.1	4.03 ± 0.09	3.06 ± 0.09 (1)	1.39 ± 0.03 (1)	1.18 ± 0.02 (1)	1.10 ± 0.04 (1)
^{133}I	2.57 ± 0.03	1.9 ± 0.1	1.83 ± 0.04 (1)	5.8 ± 0.3	5.7 ± 0.1	6.6 ± 0.1
^{134}I	7.7 ± 0.1	6.0 ± 0.1	3.6 ± 0.1 (1)	1.86 ± 0.06 (1)	1.64 ± 0.03 (1)	1.43 ± 0.04 (1)
^{135}I	5 ± 2	5.16 ± 0.06	2.56 ± 0.07 (1)	8.1 ± 0.2	7.2 ± 0.6	7.7 ± 0.2
^{88}Rb	c	c	>2	c	c	c
^{89}Rb	2.5 ± 0.2	>8	c	4 ± 1	5.8 ± 0.4	3.0 ± 0.6
^{134}Cs	<4(-1)	2.5 ± 0.3 (-1)	2.9 ± 0.6	9 ± 1 (-1)	8.3 ± 0.8 (-1)	<2
^{136}Cs	c	7.6 ± 0.9 (-1)	5 ± 2	1.7 ± 0.3	1.4 ± 0.1	<3
^{137}Cs	c	3.0 ± 0.3 (-1)	3 ± 1	1.2 ± 0.1	7.7 ± 0.8 (-1)	<1
^{138}Cs	2.1 ± 0.2	1.81 ± 0.06	6.0 ± 0.3	5.6 ± 0.3	3.9 ± 0.1	3.0 ± 0.2
^{139}Cs	5 ± 2	d	d	d	3 ± 1 (1)	c
^{24}Na	1.3 ± 0.2	1.19 ± 0.02	6.5 ± 0.2	2.8 ± 0.2	2.09 ± 0.06	1.7 ± 0.3
^{51}Cr	7 ± 1	5.3 ± 0.9	1.2 ± 0.1 (1)	7.7 ± 0.4	7.5 ± 0.3	8 ± 1
^{54}Mn	1.4 ± 0.5	2.9 ± 0.5	>7	3 ± 1	2.0 ± 0.5	<4
^{59}Fe	c	c	>5	c	c	c
^{58}Co	1.2 ± 0.4	3 ± 1	>12	2.8 ± 0.5	5 ± 1	<1.1(2)
^{60}Co	1.2 ± 0.2	2.2 ± 0.2	>9	3.6 ± 0.4	2.8 ± 0.3	<6

Table B.3-68 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time: 3-23-82 1135	3-25-82 1012	4-3-82 1206	4-8-82 0900	4-13-82 1009	4-20-82 1150
^{65}Zn	<5(-1)	2.0 ± 0.9	>1	>3	3 ± 1	<10
^{91}Sr	1.1 ± 0.1 (1)	1.5 ± 0.2 (1)	6 ± 2 (1)	2.1 ± 0.5 (1)	2.1 ± 0.3	1.5 ± 0.2 (1)
^{91m}Y	c	4 ± 2	c	c	>2	c
^{95}Nb	c	c	>1.7(2)	c	c	c
^{99}Mo	3 ± 1	>1	>5	3 ± 1	<7	4 ± 1
^{110m}Ag	c	c	c	c	c	c
^{132}Te	c	c	>13	c	>17	c
^{139}Ba	6.5 ± 0.1	7.0 ± 0.1	2.6 ± 0.1 (1)	1.30 ± 0.07 (1)	1.17 ± 0.05 (1)	9.3 ± 0.3
^{140}Ba	7.2 ± 2	5.9 ± 0.7	1.9 ± 0.5 (1)	1.3 ± 0.2 (1)	1.4 ± 0.2 (1)	1.1 ± 0.2 (1)
^{140}La	c	c	c	c	>13	c
^{141}Ce	c	c	c	>1	>1	c
^{239}Np	1.20 ± 0.03	1.55 ± 0.02	6.1 ± 0.4	1.73 ± 0.06	1.63 ± 0.03	1.8 ± 0.6

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-69
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time					
	3-23-82 1145	3-28-82 1506	4-3-82 1216	4-8-82 0858	4-13-82 1007	4-20-82 1150
^{84}Br	>6	>44	>5	>36	>17	>5
^{131}I	3.34 ± 0.06	>2.7(2)	3.20 ± 0.05	2.4 ± 0.1 (1)	7.5 ± 0.2	6.0 ± 0.2
^{132}I	1.72 ± 0.05 (1)	>7.8(2)	1.54 ± 0.04 (1)	1.08 ± 0.07 (2)	4.4 ± 0.2 (1)	2.5 ± 0.1 (1)
^{133}I	7.2 ± 0.1	>5.1(2)	6.1 ± 0.2	3.8 ± 0.3 (1)	1.45 ± 0.03 (1)	9.3 ± 0.2
^{134}I	3.0 ± 0.1 (1)	3 ± 2 (2)	2.22 ± 0.06 (1)	1.5 ± 0.1 (2)	8.4 ± 0.4 (1)	4.3 ± 0.2 (1)
^{135}I	1.01 ± 0.02 (2)	c	9.80 ± 0.02	6.6 ± 0.5 (1)	2.7 ± 0.1 (1)	1.56 ± 0.08 (1)
^{88}Rb	c	c	2 ± 1	c	c	c
^{89}Rb	3.0 ± 0.3	>56	c	2.9 ± 0.7 (1)	1.1 ± 0.3 (1)	4.5 ± 0.9
^{134}Cs	<2(-1)	>23	4.4 ± 0.4 (-1)	>5	3.0 ± 0.5	<3
^{136}Cs	<2	>10	9 ± 1 (-1)	>3	>3	<3
^{137}Cs	1.4 ± 0.5 (-1)	>12	5.7 ± 0.6 (-1)	>10	3.2 ± 0.6	<2
^{138}Cs	2.4 ± 0.1	>3.8(2)	2.31 ± 0.09	>19	8.4 ± 04	3.8 ± 0.2
^{139}Cs	>1	>5	d	>10	>3	c
^{24}Na	1.57 ± 0.03	>1.8(3)	1.32 ± 0.05	1.46 ± 0.07 (1)	4.6 ± 0.1	2.0 ± 0.3
^{51}Cr	>14	1.6 ± 0.8	4 ± 1 (1)	1.0 ± 0.4 (2)	1.6 ± 0.1 (1)	2.3 ± 0.5 (1)
^{54}Mn	3 ± 2	>2	3.3 ± 0.9	5 ± 2	>6	c
^{59}Fe	c	c	>2	c	<8(-1)	c
^{58}Co	2.5 ± 0.8	>8	2.5 ± 0.4	>7	7 ± 2	<1.5(2)
^{60}Co	5.1 ± 1	>8	1.8 ± 0.2	>8	7 ± 2	<13

Table B.3-69 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time 3-23-82 1145	3-28-82 1506	4-3-82 1216	4-8-82 0858	4-13-82 1007	4-20-82 1150
^{65}Zn	c	>2	2 ± 1	>3	>2	<7
^{91}Sr	3 ± 1 (1)	>47	3.4 ± 0.7 (1)	>46	3.9 ± 0.8	>19
^{91m}Y	<2	c	c	c	>6	<3
^{95}Nb	c	c	>2.1(2)	c	c	c
^{99}Mo	>3	c	>4	>9	>10	>2
^{110m}Ag	c	2.1 ± 0.9	<4	c	c	c
^{132}Te	c	c	4 ± 3	c	>25	c
^{139}Ba	7.8 ± 0.1	>3.7(2)	1.08 ± 0.03 (1)	6.9 ± 0.9 (1)	3.1 ± 0.2 (1)	1.16 ± 0.04 (1)
^{140}Ba	>7	1.4 ± 0.5 (1)	1.1 ± 0.2 (1)	>31	3.3 ± 0.7 (1)	1.4 ± 0.2 (1)
^{140}La	c	8 ± 3	c	c	>8	c
^{141}Ce	c	<2	c	2 ± 1 (-1)	>3	c
^{239}Np	1.42 ± 0.08	>2.0(2)	1.29 ± 0.03	1.5 ± 0.3 (1)	3.06 ± 0.07	1.79 ± 0.06

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-70
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 4-3-82 1224	4-8-82 0854
^{131}I	>1.1(1)	>8[b]
^{132}I	>2	>3
^{133}I	1.4 ± 0.4 (1)	1.8 ± 0.4 (1)
^{134}I	c	c
^{135}I	>7	>3
^{134}Cs	2 ± 1	c
^{136}Cs	d	c
^{137}Cs	1.9 ± 0.8	>2
^{138}Cs	d	d
^{24}Na	5.4 ± 0.2	6.0 ± 0.6
^{51}Cr	4.8 ± 0.5 (1)[b]	4.1 ± 0.4 (1)[b]
^{54}Mn	>4.1(1)	>7
^{59}Fe	>2.2(1)[b]	c
^{57}Co	d	c
^{58}Co	1.0 ± 0.4 (1)[b]	>2[b]
^{60}Co	>1.3(1)[b]	>5[b]
^{91}Sr	2.5 ± 0.5 (1)[b]	>1.2(1)[b]
^{91m}Y	<6(-1)[b]	d

Table B.3-70 (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 4-3-82 1224	4-8-82 0854
^{99}Mo	>8	d
^{129}Te	d	d
^{132}Te	5 ± 2	d
^{139}Ba	>2.5(1)[b]	d
^{140}Ba	>8[b]	d
^{239}Np	>2	d

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-71
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time 3-23-82 1140	4-3-82 1206	4-8-82 0900
^{131}I	3.8 ± 0.9	2 ± 1 (1)	>5[b]
^{132}I	d	>1.3(1)	>7
^{133}I	3.5 ± 0.7	1.9 ± 0.3 (1)	1.1 ± 0.3 (1)
^{134}I	d	d	c
^{135}I	c	5 ± 2	>4
^{134}Cs	d	>2	<2
^{136}Cs	d	d	<4[b]
^{137}Cs	<1.6(-1)	2 ± 1	8 ± 3 (-1)
^{24}Na	1.1 ± 0.1	7.7 ± 0.5	2.5 ± 0.1
^{51}Cr	1.13 ± 0.06	3.3 ± 0.2 (1)[b]	9.6 ± 0.7 [b]
^{54}Mn	>4	4 ± 1 (1)	>5
^{59}Fe	d	3.0 ± 0.8 (1)[b]	c
^{58}Co	3 ± 2 [b]	>9[b]	>1[b]
^{60}Co	2.10 ± 0.05	1.7 ± 0.6 (1)[b]	>4[b]
^{91}Sr	>1[b]	>1.2(1)[b]	>1.2(1)[b]
^{91m}Y	d	d	d
^{93}Y	d	d	d
^{99}Mo	c	>4	>4

Table B.3-71 (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time 3-23-82 1140	4-3-82 1206	4-8-82 0900
^{106}RuD	c	d	d
^{129}Te	d	d	c
^{132}Te	d	c	<2[b]
^{139}Ba	d	>2.0(1)[b]	9 ± 1 [b]
^{140}Ba	>9(-1)[b]	>7[b]	>8[b]
^{239}Np	>1	5.8 ± 0.3	>2

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-72
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time 3-23-82 1145	4-3-82 1216	4-8-82 0857
^{131}I	>9	5.5 ± 0.9	>3[b]
^{132}I	d	>2	>3
^{133}I	>8	6.0 ± 0.5	>3.0(1)
^{134}I	d	c	c
^{135}I	c	7 ± 2	>6
^{134}Cs	d	4 ± 2 (-1)	c
^{136}Cs	d	d	c
^{137}Cs	<6.3(-2)	5 ± 2 (-1)	>2
^{24}Na	1.7 ± 0.3	1.63 ± 0.06	1.5 ± 0.3 (1)
^{51}Cr	1.7 ± 0.7 (2)	1.3 ± 0.3 (2)[b]	5.9 ± 0.8 (1)[b]
^{54}Mn	>1.1(1)	4 ± 2 (1)	>7
^{59}Fe	d	>3.0(1)[b]	c
^{58}Co	>1[b]	4 ± 1 [b]	>2[b]
^{60}Co	>6	4.3 ± 0.4 [b]	1.7 ± 0.8 [b]
^{91}Sr	>4[b]	1.5 ± 0.3 (1)[b]	>8[b]
^{91m}Y	d	b	d
^{93}Y	d	d	d
^{99}Mo	c	>3	>4

Table B.3-72 (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time 3-23-82 1145	4-3-82 1216	4-8-82 0857
^{106}RuD	c	d	d
^{129}Te	d	d	c
^{132}Te	d	c	c
^{139}Ba	d	2.2 ± 0.8 (1)[b]	5 ± 2 (1)[b]
^{140}Ba	>2[b]	>3[b]	>3[b]
^{239}Np	1.4 ± 0.5	1.2 ± 0.4	>2

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table 3.73
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 4-3-82 1224	4-8-82 0854
^{131}I	6.6 ± 0.3	8.6 ± 0.2[b]
^{132}I	1.81 ± 0.05(1)	3.5 ± 0.1 (1)
^{133}I	9.3 ± 0.4	1.49 ± 0.03 (1)
^{134}I	2.2 ± 0.2 (1)	5.0 ± 0.2 (1)
^{135}I	1.39 ± 0.04(1)	2.22 ± 0.05 (1)
^{134}Cs	d	3.1 ± 0.9[b]
^{136}Cs	d	2.5 ± 0.5
^{137}Cs	d	1.8 ± 0.4
^{138}Cs	d	9.8 ± 0.8
^{24}Na	2.66 ± 0.08	5.6 ± 0.4
^{51}Cr	2 ± 1 (1)[b]	>2.0(1)[b]
^{54}Mn	>7(-1)	>3
^{59}Fe	c	>3
^{57}Co	d	>8(-1)
^{58}Co	>1[b]	5 ± 4[b]
^{60}Co	>1[b]	>4[b]
^{91}Sr	2.0 ± 0.5 (1)[b]	>2.7(1)[b]
^{91m}Y	<8[b]	d

Table 3.73 (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time: 4-3-82 1224	Date and Time: 4-8-82 0854
^{99}Mo	4 ± 2	>7
^{129}Te	d	>5
^{132}Te	c	>5[b]
^{139}Ba	2.7 ± 0.9 (1)[b]	3.7 ± 0.6 (1)[b]
^{140}Ba	>5[b]	>1.2(1)[b]
^{239}Np	1.4 ± 0.8	3.5 ± 0.1

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-73 (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER

Nuclide	Date and Time 9-29-82 1110
^{54}Mn	1.8 ± 0.2
^{58}Co	9 ± 2 (-1)
^{60}Co	1.0 ± 0.1
^{65}Zn	1.0 ± 0.4
^{95}Nb	<1(-1)
^{140}La	<6(-1)

Table B.3-74
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time 3-23-82 1140	4-3-82 1206	4-8-82 0900
^{131}I	1.65 ± 0.05	1.20 ± 0.04 (1)	3.69 ± 0.04[b]
^{132}I	5.4 ± 0.1	3.1 ± 0.1 (1)	1.37 ± 0.03 (1)
^{133}I	2.6 ± 0.1	1.72 ± 0.08 (1)	5.82 ± 0.09
^{134}I	1.0 ± 0.1 (1)	3.76 ± 0.08 (1)	1.9 ± 0.1 (1)
^{135}I	3.54 ± 0.05[b]	2.43 ± 0.06 (1)	9.2 ± 0.2
^{134}Cs	d	>1	1.1 ± 0.2
^{136}Cs	d	d	1.1 ± 0.2[b]
^{137}Cs	<2.7	>3	8 ± 2 (-1)
^{138}Cs	d	d	4.4 ± 0.6
^{24}Na	1.26 ± 0.03	6.4 ± 0.2	2.8 ± 0.2
^{51}Cr	>1	7 ± 1[b]	7.9 ± 0.8
^{54}Mn	c	>7(-1)	>3
^{59}Fe	d	c	3 ± 1
^{57}Co	d	d	>2
^{58}Co	>3[b]	>3[b]	>1[b]
^{60}Co	>2	>1[b]	>2.9 ± 0.6[b]
^{91}Sr	1.2 ± 0.2(1)[b]	>2.1(1)[b]	2.3 ± 0.6 (1)[b]

Table 8.3-74 (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time 3-23-82 1140	4-3-82 1206	4-8-82 0900
^{91m}Y	>4	7 ± 1[b]	d
^{99}Mo	>2[b]	>4	7 ± 2
^{106}RuD	>1[b]	d	d
^{129}Te	d	d	>3
^{132}Te	d	>4	>3[b]
^{139}Ba	7.9 ± 0.5	d	1.5 ± 0.1 (1)[b]
^{140}Ba	>2[b]	1.2 ± 0.6 (1)[b]	>7[b]
^{239}Np	1.42 ± 0.06	9 ± 3	1.68 ± 0.05

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-75
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time 3-23-82 1145	4-3-82 1216	4-8-82 0857
^{131}I	3.8 ± 0.2	2.9 ± 0.1[b]	2.3 ± 0.1 (1)[b]
^{132}I	2.0 ± 0.1 (1)	1.56 ± 0.07(1)	1.00 ± 0.06(2)
^{133}I	7.8 ± 0.2	5.8 ± 0.3	4.3 ± 0.2 (1)
^{134}I	4 ± 2 (1)	2.4 ± 0.2 (1)	2.0 ± 0.4 (2)
^{135}I	1.07 ± 0.03(1)[b]	1.00 ± 0.03(1)	7.0 ± 0.4 (1)
^{134}Cs	d	3.9 ± 0.8 (-1)	4 ± 1
^{136}Cs	d	d	>3
^{137}Cs	<1.7	6 ± 1	>6
^{138}Cs	d	d	3 ± 1 (1)
^{24}Na	1.59 ± 0.05	1.28 ± 0.04	1.6 ± 0.1 (1)
^{51}Cr	>3	>9[b]	>4.5(1)[b]
^{54}Mn	c	>7(-1)	>3
^{59}Fe	d	c	>3
^{57}Co	d	d	>1
^{58}Co	>7[b]	>1[b]	>4[b]
^{60}Co	>2	1.0 ± 0.3 [b]	>4[b]
^{91}Sr	>1.9(1)[b]	2.1 ± 0.7 (1)[b]	>8.3(1)[b]

Table B.3-75 (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time: 3-23-82 1145	4-3-82 1216	4-8-82 0857
^{91m}Y	4 ± 1	>11[b]	d
^{99}Mo	>2[b]	>4	1.4 ± 0.7 (1)
^{106}RuD	>3[b]	d	d
^{129}Te	d	d	>7
^{132}Te	d	>4	>5[b]
^{139}Ba	9.7 ± 0.8	7.8 ± 0.6 [b]	8 ± 2 (1)[b]
^{140}Ba	>5[b]	7 ± 3 [b]	1.8 ± 0.5 (1)[b]
^{239}Np	1.6 ± 0.1	1.2 ± 0.2	1.1 ± 0.1 (1)

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-76
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER

Nuclide	Date and Time					
	3-15-82 0821	4-6-82 0935	4-11-82 0915	4-20-82 1150	9/29/82 1110	10/4/82 1229
^{84}Br	d	c	d	>13	d	d
^{131}I	1.0 ± 0.1 (3)	>55	>16	>34	c	>5
^{132}I	>94	1.6 ± 0.3 (2)	>10	>84	c	d
^{133}I	7 ± 2 (2)	4 ± 2 (2)	>98	2.1 ± 0.7 (2)	c	>2(1)
^{134}I	d	>88	c	>19	d	d
^{135}I	>90	>1.3(2)	>19	>29	c	>2
^{88}Rb	d	c	d	c	d	d
^{89}Rb	d	d	d	>2	d	d
^{134}Cs	>6.8(2)	>9	c	6 ± 3	>2	c
^{136}Cs	>64	>7	c	>10	c	c
^{137}Cs	>3.4(2)	>84	>2	>6	>2	c
^{138}Cs	d	7 ± 1	d	8 ± 2	d	d
^{139}Cs	d	d	d	d	d	d
^{24}Na	>2.9(2)	>4.6(2)	>1.3(2)	5 ± 2 (2)	c	>1(1)
^{51}Cr	>1	>3	>1	5 ± 2	c	c
^{54}Mn	>4	2 ± 1	<1	<1	>1(1)	>3
^{59}Fe	c	c	c	c	c	c
^{58}Co	>10	>6	>1	>3	>1(1)	>6

Table B.3-76 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER

Nuclide	Date and Time					
	3-15-82 0821	4-6-82 0935	4-11-82 0915	4-20-82 1150	9/29/82 1110	10/4/82 1229
^{60}Co	>7	>3	c	>5	>1(2)	>2(1)
^{65}Zn	>5	c	c	c	c	c
^{91}Sr	c	>35	>9	>7	c	c
^{91m}Y	d	c	c	c	d	d
^{95}Nb	c	c	c	c	c	c
^{99}Mo	>9	c	c	c	c	c
^{110m}Ag	c	c	c	c	c	c
^{132}Te	c	c	c	c	c	c
^{139}Ba	c	>3	>2	>2.5(2)	d	d
^{140}Ba	>7	>6	c	>5	c	c
^{140}La	c	c	>1	c	c	c
^{141}Ce	c	c	c	c	c	c
^{239}Np	>71	>47	>22	>41	c	>2(1)

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-76 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER

Nuclide	Date and Time 10-20-82 1216
^{84}Br	d
^{131}I	>1(1)
^{132}I	d
^{133}I	>7(1)
^{134}I	d
^{135}I	>8
^{88}Rb	d
^{89}Rb	d
^{134}Cs	>0
^{136}Cs	c
^{137}Cs	>1
^{138}Cs	d
^{139}Cs	d
^{24}Na	>2(1)
^{51}Cr	c
^{54}Mn	1.0 ± 0.4 (1)
^{59}Fe	c
^{58}Co	>5
^{60}Co	>1.9(1)

Table B.3-76 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER

Nuclide	Date and Time 10-20-82 1216
^{65}Zn	c
^{91}Sr	>3
^{91m}Y	d
^{95}Nb	c
^{99}Mo	c
^{110m}Ag	c
^{132}Te	c
^{139}Ba	d
^{140}Ba	c
^{140}La	>1
^{141}Ce	c
^{239}Np	>4

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-77
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time 3-21-82 0945	3-25-82 1002	3-28-82 1458	4-3-82 1232	4-8-82 0848	4-13-82 1003
^{84}Br	c	>30	>15	c	c	c
^{131}I	3 ± 1 (2)	>7.1(2)	1.2 ± 0.6 (2)	>33	>10	>37
^{132}I	>4.0(2)	>1.7(3)	>1.7(2)	1.2 ± 0.4 (2)	>43	4 ± 1 (1)
^{133}I	>3.6(2)	>1.2(3)	4.4 ± 0.9 (2)	2.4 ± 0.8 (2)	>50	2 ± 1 (2)
^{134}I	>2.4(2)	>1.2(3)	3 ± 1 (2)	>43	>18	>7
^{135}I	<2.7(2)	>3.4(2)	>2.4(2)	>1.5(2)	>14	>72
^{88}Rb	c	c	c	c	c	d
^{89}Rb	>17	>3	>17	d	c	d
^{134}Cs	>2.0(2)	c	>10	>2	<4(-1)	>3
^{136}Cs	>14	c	>12	>2	<4(-1)	>2
^{137}Cs	>57	<90	4 ± 2 (1)	3.6 ± 0.8	<6(-1)	3 ± 1
^{138}Cs	8.3 ± 0.4	1.26 ± 0.08 (1)	1.0 ± 0.1 (1)	2.8 ± 0.2	3.0 ± 0.5	<5(-1)
^{139}Cs	c	d	>3	d	d	d
^{24}Na	>7.0(2)	>4.1(3)	>1.3(3)	>5.1(2)	>1.3(2)	>3.7(2)
^{51}Cr	>2	>1.6(2)	3 ± 1	>2	>8(-1)	>5
^{54}Mn	>16	c	>7	c	>3(-1)	c
^{59}Fe	<2	c	c	>7	c	c
^{58}Co	>23	>4(2)	>31	>7	<4(-1)	>1
^{60}Co	>7	>10	>11	>3	<4(-1)	>2

Table B.3-77 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time					
	3-21-82 0945	3-25-82 1002	3-28-82 1458	4-3-82 1232	4-8-82 0848	4-13-82 1003
^{65}Zn	>3	<2(2)	>10	>1	c	c
^{91}Sr	>10	>2.9(2)	>63	c	>1	>17
^{91m}Y	c	>30	c	<19	c	c
^{95}Nb	c	>6.3(2)	c	c	c	c
^{99}Mo	c	c	>5	c	c	<6(-1)
^{110m}Ag	c	d	2.2 ± 0.8	c	c	c
^{132}Te	c	c	c	>9	c	c
^{139}Ba	>42	>2.4(2)	1.1 ± 0.4 (2)	>17	>9	>4
^{140}Ba	>14	c	2.3 ± 0.8 (1)	>3	<6(-1)	>3
^{140}La	c	>10	<2	c	c	c
^{141}Ce	c	c	>2	c	c	c
^{239}Np	>76	>58	<2.3(2)	>28	>30	>30

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-77 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time 4-20-82 1145
^{84}Br	>15
^{131}I	>67
^{132}I	>1.4(2)
^{133}I	1.9 ± 0.5 (2)
^{134}I	>37
^{135}I	>44
^{88}Rb	c
^{89}Rb	>9(-1)
^{134}Cs	1.0 ± 0.5
^{136}Cs	>8
^{137}Cs	4 ± 1
^{138}Cs	7 ± 1
^{139}Cs	d
^{24}Na	>7.9(2)
^{51}Cr	>6
^{54}Mn	>2
^{59}Fe	c
^{58}Co	>3

Table 8.3-77 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time 4-20-82 1145
^{60}Co	>5
^{65}Zn	c
^{91}Sr	>21
^{91m}Y	<9
^{95}Nb	c
^{99}Mo	c
^{110m}Ag	c
^{132}Te	c
^{139}Ba	>29
^{140}Ba	>5
^{140}La	c
^{141}Ce	c
^{239}Np	>47

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-78
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "B"

Nuclide	Date and Time 3-21-82 0935	3-25-82 1010	3-28-82 1501
^{84}Br	c	>26	>5
^{131}I	>2.1(2)	>2.5(2)	>1.2(2)
^{132}I	>5.3(2)	>1.7(3)	>2.3(2)
^{133}I	>2.6(2)	>8.2(2)	>3.8(2)
^{134}I	>3.8(2)	>1.2(3)	>96
^{135}I	>82	>5.1(2)	>1.2(2)
^{88}Rb	c	c	c
^{89}Rb	>70	>21	>2
^{134}Cs	>1.0(2)	c	>10
^{136}Cs	>14	c	>10
^{137}Cs	>1.1(2)	c	>11
^{138}Cs	>11	1.5 ± 0.1 (1)	4.4 ± 0.3
^{139}Cs	c	d	d
^{24}Na	>4.2(2)	>4.1(3)	>8.4(2)
^{51}Cr	>1	>1.6(2)	>3
^{54}Mn	>7	c	>3
^{59}Fe	c	c	c
^{58}Co	>5	>2.3(2)	>6

Table B.3-78 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "B"

Nuclide	Date and Time 3-21-82 0935	3-25-82 1010	3-28-82 1501
^{60}Co	>11	>15	>8
^{65}Zn	>2	c	>4
^{91}Sr	>23	>3.3(2)	>48
^{91m}Y	c	>13	c
^{95}Nb	c	>6.3(2)	c
^{99}Mo	c	c	>5
^{110m}Ag	c	c	<9(-1)
^{132}Te	c	c	c
^{139}Ba	>35	>3.2(2)	>6
^{140}Ba	>14	c	>17
^{140}La	c	>12	c
^{141}Ce	c	c	>2
^{239}Np	>38	>1.1(2)	>1.6(2)

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table 8.3-79
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "E"

Nuclide	Date and Time 3-20-82 1024	3-28-82 1503	4-3-82 1242	4-8-82 0852	4-13-82 1005	4-20-82 1145
^{84}Br	c	>3	c	c	c	>18
^{131}I	>4.0(2)	>1.2(2)	>33	>8	>37	>84
^{132}I	1.2 ± 0.4 (2)	>2.8(2)	>74	>42	4 ± 2 (1)	>1.0(2)
^{133}I	>5.9(2)	>7.6(2)	3 ± 1 (2)	>75	>1.1(2)	>1.6(2)
^{134}I	>2.5(2)	>1.4(2)	>43	>36	>9	>75
^{135}I	>1.6(2)	>7.9(2)	>73	>21	>57	>88
^{88}Rb	1.2 ± 0.7	c	c	c	d	<4(-1)
^{89}Rb	>1.0(2)	>1	d	c	d	>2
^{134}Cs	>1.9(2)	>40	>5	<7(-1)	>3	>6
^{136}Cs	>54	>8	>5	<7(-1)	>4	>10
^{137}Cs	>78	4 ± 2 (1)	>8	<8(-1)	>2	>6
^{138}Cs	1.1 ± 0.5	>1.7(2)	2.9 ± 0.3	3.3 ± 0.4	<5(-1)	9 ± 1
^{139}Cs	>14	d	d	d	d	d
^{24}Na	>3.1(3)	>8.4(2)	>5.2(2)	>2.6(2)	>2.5(2)	>7.9(2)
^{51}Cr	c	4 ± 2	>2	<6(-1)	2.6 ± 0.6	2.9 ± 0.8
^{54}Mn	>2	>7	c	5 ± 2 (-1)	c	>2
^{59}Fe	c	c	>14	c	c	c
^{58}Co	>18	>25	>3	<4(-1)	>1	>5

Table 8.3-79 (cont'd)
DF'S FOR UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "E"

Nuclide	Date and Time					
	3-20-82 1024	3-28-82 1503	4-3-82 1242	4-8-82 0852	4-13-82 1005	4-20-82 1145
^{60}Co	>12	>23	>1	4 ± 2 (-1)	>2	>5
^{65}Zn	>3	>10	<3	c	c	c
^{91}Sr	>22	>19	>14	>4	>6	>18
^{91m}Y	>10	c	c	c	c	c
^{95}Nb	c	c	c	c	c	c
^{99}Mo	c	6 ± 3 (1)	c	c	>1	c
^{110m}Ag	>2	1.1 ± 0.4 (1)	c	c	c	c
^{132}Te	c	c	>9	c	c	c
^{139}Ba	>64	>81	>21	>9	>4	>25
^{140}Ba	<10	2.2 ± 0.6 (1)	>5	<6(-1)	>3	>5
^{140}La	c	c	c	c	c	c
^{141}Ce	c	>1	c	c	c	c
^{239}Np	>56	>2.3(2)	>24	>30	>23	>41

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-80
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time 3-21-82 0945	4-3-82 1232	4-8-82 0847
^{131}I	>2	c	c
^{132}I	c	c	c
^{133}I	>8.9(-1)	>2	>1
^{134}I	d	d	c
^{135}I	c	c	c
^{134}Cs	>9	>1	>1[b]
^{136}Cs	>2	d	c
^{137}Cs	>5	>1	c
^{138}Cs	d	d	c
^{24}Na	>2.2(1)[b]	>2.5(1)	>1.0(1)
^{51}Cr	d	>5[b]	>3
^{54}Mn	d	c	c
^{59}Fe	d	c	c
^{57}Co	d	d	c
^{58}Co	d	>2	c
^{60}Co	c	c	c
^{91}Sr	c	2 ± 1[b]	c

Table B.3-80 (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time		
	3-21-82 0945	4-3-82 1232	4-8-82 0847
^{99}Mo	d	c	c
^{129}Te	d	d	d
^{132}Te	d	>8(-1)	c
^{139}Ba	d	c	>2[b]
^{140}Ba	c	c	c
^{239}Np	>3	c	>4(-1)

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-81
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER B

Nuclide	Date and Time 3-21-82 0935
^{131}I	>3
^{132}I	c
^{133}I	>2
^{135}I	c
^{134}Cs	>2.3(1)
^{136}Cs	>3
^{137}Cs	>1.0(1)
^{24}Na	>2.2(1)[b]
^{60}Co	c
^{91}Sr	c
^{140}Ba	c
^{239}Np	>1

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

Table B.3-82
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "E"

Nuclide	Date and Time 3-20-82 1024	4-3-82 1242	4-8-82 0851
^{131}I	>1	c	c
^{132}I	c	c	c
^{133}I	>3	>4	>1
^{134}I	>2	d	c
^{135}I	>2	c	c
^{134}Cs	>7.1(1)	>2	c
^{136}Cs	>1.2(1)	d	c
^{137}Cs	>9.1(1)	>2	c
^{138}Cs	>8	d	c
^{24}Na	>1.1(2)	>3.3(1)	>8
^{51}Cr	>2	7 ± 2[b]	4 ± 2
^{54}Mn	d	c	c
^{59}Fe	d	c	c
^{57}Co	d	d	c
^{58}Co	d	>2	c
^{60}Co	c	c	c
^{91}Sr	>3	>2[b]	c

Table B.3-82 (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "E"

Nuclide	Date and Time 3-21-82 1024	4-3-82 1242	4-8-82 0851
^{99}Mo	d	c	c
^{129}Te	c	d	c
^{132}Te	d	>8(-1)	c
^{139}Ba	>1.8(1)[b]	c	>7(-1)[b]
^{140}Ba	d	c	c
^{239}Np	c	c	>4(-1)

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-83
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time		
	3-21-82 0945	4-3-82 1232	4-8-82 0847
^{131}I	>2.0(2)	>7.8(1)	>1.6(1)[b]
^{132}I	d	>4.7(1)	>3.8(1)
^{133}I	>8.0(2)	>1.6(3)	1.3 ± 0.4 (2)
^{134}I	d	>1.0(1)	>1.8(1)
^{135}I	>3.3(1)	>1.8(2)	>2.1(1)
^{134}Cs	>1.4(2)	>1	>4(-1)[b]
^{136}Cs	>1.3(1)	d	>2
^{137}Cs	>6.1(1)	>2	>7(-1)
^{24}Na	>7.6(2)[b]	>1.1(2)	>1.6(2)
^{51}Cr	d	>7(-1)[b]	c
^{54}Mn	d	d	c
^{59}Fe	d	c	c
^{57}Co	d	d	c
^{58}Co	d	c	>3(-1)
^{60}Co	>1.0(1)	c	c
^{91}Sr	>8	>1.0(1)[b]	c
^{91m}Y	d	c	d

Table 8.3-83 (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "A"

Nuclide	Date and Time 3-21-82 0945	4-3-82 1232	4-8-82 0847
^{99}Mo	d	>3	c
^{129}Te	d	d	c
^{132}Te	d	c	c
^{139}Ba	d	>7(-1)	>3[b]
^{140}Ba	>2.2(1)[b]	c	c
^{239}Np	>1.7(2)	>3.0(1)	>7

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-84
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER B

Nuclide	Date and Time 3-21-82 0935
^{131}I	>2.0(2)
^{132}I	>8.0(1)
^{133}I	>6.9(1)
^{135}I	>1.1(2)
^{134}Cs	>5.6(1)
^{136}Cs	>8
^{137}Cs	>6.1(1)
^{24}Na	>1.0(3)[b]
^{60}Co	>4
^{91}Sr	>2.4(1)
^{140}Ba	>1.3(1)[b]
^{239}Np	>7.7(1)

b. Sum and grab values do not agree.

Table B.3-85
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "E"

Nuclide	Date and Time		
	3-20-82 1024	4-3-82 1242	4-8-82 0851
^{131}I	>1.3(2)	>7.0(1)	>2.4(1)[b]
^{132}I	>2.5(2)	>6	>2.7(1)
^{133}I	>1.5(2)	4 ± 2 (2)	>7.5(1)
^{134}I	>6.4(1)	d	>3.6(1)
^{135}I	>8.6(1)	>8.0(1)	>2.1(1)
^{134}Cs	>6.7(1)	>1	>6(-1)[b]
^{136}Cs	>8	d	>8(-1)
^{137}Cs	>2.5(1)	>5	>7(-1)
^{24}Na	>5.6(2)	>5.1(2)	>1.6(2)
^{51}Cr	c	>2[b]	c
^{54}Mn	d	c	c
^{59}Fe	d	c	c
^{57}Co	d	d	c
^{58}Co	d	<2	>3(-1)
^{60}Co	>2[b]	c	c
^{91}Sr	>1.2(1)	>4[b]	c
^{91m}Y	d	d	d

Table B.3-85 (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 CONDENSATE DEEPBED DEMINERALIZER "E"

Nuclide	Date and Time 3-20-82 1024	4-3-82 1242	4-8-82 0851
^{99}Mo	d	>6	c
^{129}Te	d	d	c
^{132}Te	d	c	c
^{139}Ba	>1.7(1)[b]	d	>4[b]
^{140}Ba	c	c	c
^{239}Np	>2.4(1)	>4.5(1)	>1.6(1)

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-86
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-13-82 0930	5-18-82 1228	5-25-82 1402	5-31-82 1144	6-8-82 1041	7-1-82 0950
^{131}I	5.2 ± 0.8 (-7)	4.5 ± 0.5 (-7)	4.4 ± 0.6 (-7)	3.9 ± 0.6 (-7)	1.6 ± 0.7 (-7)	4.6 ± 0.7 (-7)
^{132}I	1.39 ± 0.08(-5)	1.35 ± 0.08(-5)	1.53 ± 0.06(-5)	1.05 ± 0.03(-5)	<4(-7)	6.5 ± 0.4 (-6)
^{133}I	5.3 ± 0.7 (-6)	5.4 ± 0.2 (-6)	4.7 ± 0.3 (-6)	5.0 ± 0.4 (-6)	1.66 ± 0.09(-6)	4.0 ± 0.4 (-6)
^{134}I	2.6 ± 0.1 (-5)	2.1 ± 0.4 (-5)	2.8 ± 0.1 (-5)	2.95 ± 0.06(-5)	<4(-6)	1.44 ± 0.07(-5)
^{135}I	1.2 ± 0.1 (-5)	1.08 ± 0.08(-5)	1.16 ± 0.08(-5)	1.26 ± 0.05(-5)	7 ± 2 (-7)	8.7 ± 0.8 (-6)
^{89}Rb	2.5 ± 0.3 (-5)	*	<9(-5)	2.8 ± 0.4 (-5)	*	2.8 ± 0.6 (-5)
^{138}Cs	1.6 ± 0.1 (-5)	<3(-4)	1.8 ± 0.3 (-5)	1.27 ± 0.09(-5)	<3(-5)	1.7 ± 0.2 (-5)
^{24}Na	6.8 ± 3.4 (-7)	5 ± 1 (-7)	6 ± 1 (-7)	4 ± 1 (-7)	5.1 ± 0.7 (-7)	4.5 ± 0.5 (-6)
^{51}Cr	<9(-7)	<4(-7)	<7(-7)	<6(-7)	<7(-7)	<8(-7)
^{54}Mn	<2(-7)	1.4 ± 0.4 (-7)	<8(-8)	<7(-8)	<2(-7)	<7(-8)
^{56}Mn	<4(-6)	<3(-6)	1.8 ± 0.8 (-6)	3.6 ± 0.7 (-6)	<8(-7)	<3(-6)
^{59}Fe	<1(-7)	1.0 ± 0.3 (-7)	1.8 ± 0.8 (-7)	<8(-8)	<2(-7)	<1(-7)
^{58}Co	<2(-7)	5 ± 2 (-8)	8 ± 4 (-8)	<6(-8)	<7(-8)	7 ± 3 (-8)
^{60}Co	<2(-7)	8.1 ± 0.6 (-7)	4 ± 2 (-7)	<2(-7)	<2(-7)	<2(-7)
^{91}Sr	<3(-6)	<2(-6)	1.2 ± 0.6 (-6)	<3(-6)	<9(-7)	<2(-6)
^{110m}Ag	<8(-8)	<5(-8)	<7(-8)	<8(-8)	<6(-8)	<8(-8)
^{139}Ba	1.7 ± 0.7 (-5)	<3(-5)	2.0 ± 0.7 (-5)	1.5 ± 0.4 (-5)	<6(-6)	1.3 ± 0.6 (-5)

Table B.3-86 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	5-13-82 0930	5-18-82 1228	5-25-82 1402	5-31-82 1144	6-8-82 1041	7-1-82 0950
^{152}Eu	<3(-7)	<2(-7)	<3(-7)	<2(-7)	<3(-7)	<4(-7)

* Radionuclide not measured.

Table B.3-86 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time 10-10-82 0055	10-19-82 1152
^{131}I	<2(-7)	<2(-7)
^{132}I	<4(-7)	1.7 ± 0.1 (-6)
^{133}I	<5(-7)	2.4 ± 0.1 (-6)
^{134}I	<9(-7)	1.01 ± 0.05(-5)
^{135}I	<8(-7)	5.35 ± 0.03(-6)
^{89}Rb	<3(-4)	<5(-5)
^{138}Cs	<4(-6)	1.6 ± 0.2 (-5)
^{24}Na	<8(-8)	2.7 ± 0.4 (-7)
^{51}Cr	<1(-6)	<6(-7)
^{54}Mn	<4(-7)	<2(-7)
^{56}Mn	<7(-7)	<8(-7)
^{59}Fe	<2(-7)	<2(-7)
^{58}Co	<2(-7)	<3(-7)
^{60}Co	<5(-7)	<4(-7)
^{91}Sr	<5(-7)	9 ± 2 (-7)
^{110m}Ag	<2(-7)	1.3 ± 0.3 (-7)
^{139}Ba	<3(-6)	2.6 ± 0.6 (-5)
^{152}Eu	<4(-7)	<2(-7)

Table B.3-87
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time					
	5-13-82 0929	5-18-82 1223	5-25-82 1404	5-31-82 1146	6-8-82 1046	7-1-82 0950
^{131}I	1.7 ± 0.7 (-7)	<2(-7)	<2(-7)	<2(-7)	<7(-8)	<2(-7)
^{132}I	3.3 ± 0.2 (-6)	3.8 ± 0.4 (-6)	3.2 ± 0.2 (-6)	3.2 ± 0.1 (-6)	<2(-7)	2.1 ± 0.3 (-6)
^{133}I	1.4 ± 0.2 (-6)	1.4 ± 0.2 (-6)	1.5 ± 0.2 (-6)	1.5 ± 0.1 (-6)	<6(-8)	1.2 ± 0.2 (-6)
^{134}I	6.8 ± 0.4 (-6)	<1(-5)	6.5 ± 0.8 (-6)	8.3 ± 0.5 (-6)	<2(-6)	3.5 ± 0.5 (-6)
^{135}I	3.4 ± 0.5 (-6)	3.3 ± 0.4 (-6)	2.4 ± 0.3 (-6)	3.5 ± 0.2 (-6)	<4(-7)	2.8 ± 0.9 (-6)
^{89}Rb	<1(-5)	*	*	<6(-5)	*	<2(-5)
^{138}Cs	4.5 ± 0.7 (-6)	*	<2(-5)	3 ± 1 (-6)	<2(-5)	3 ± 1 (-6)
^{24}Na	<3(-7)	<3(-7)	<2(-7)	<2(-7)	7 ± 3 (-8)	1.2 ± 0.2 (-6)
^{51}Cr	<6(-7)	<2(-7)	5.7 ± 0.5 (-6)	<9(-7)	<5(-7)	<9(-7)
^{54}Mn	<8(-8)	<8(-8)	1.7 ± 0.3 (-7)	<1(-7)	<6(-8)	<2(-7)
^{56}Mn	<2(-6)	<2(-6)	<2(-6)	<2(-6)	<5(-7)	<9(-7)
^{59}Fe	<2(-7)	<1(-7)	<3(-7)	<1(-7)	<1(-7)	<2(-7)
^{58}Co	<8(-8)	<2(-7)	<8(-8)	<2(-7)	<9(-8)	<2(-7)
^{60}Co	<3(-7)	9 ± 1 (-7)	1.9 ± 0.2 (-6)	<2(-7)	<1(-7)	<3(-7)
^{91}Sr	<6(-7)	<8(-7)	<1(-5)	<5(-7)	<2(-7)	<1(-6)
^{110m}Ag	<7(-8)	<1(-7)	*	<8(-8)	<7(-8)	<2(-7)
^{139}Ba	<2(-5)	<2(-5)	<2(-6)	<9(-6)	<7(-6)	<8(-6)

* Radionuclide not measured.

Table 3.87 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time 10-10-82 0215	10-13-82 1150	10-13-82 1603	10-19-82 1150
^{131}I	<9(-8)	<6(-8)	<2(-7)	<3(-7)
^{132}I	<2(-7)	<2(-7)	<2(-7)	<7(-7)
^{133}I	<2(-7)	<7(-8)	<2(-7)	5.5 ± 0.5 (-7)
^{134}I	<2(-6)	<3(-7)	<3(-7)	<7(-6)
^{135}I	<5(-7)	<2(-7)	<3(-7)	9 ± 2 (-7)
^{89}Rb	<2(-4)	<8(-6)	<2(-6)	*
^{138}Cs	<3(-6)	8 ± 4 (-7)	<3(-7)	<3(-5)
^{24}Na	<7(-8)	<5(-8)	<7(-8)	<2(-7)
^{51}Cr	<8(-7)	<4(-7)	<6(-7)	<2(-6)
^{54}Mn	3.6 ± 0.6 (-7)	<7(-8)	<1(-7)	<9(-8)
^{56}Mn	<6(-7)	<4(-7)	<6(-7)	<2(-6)
^{59}Fe	<3(-7)	<7(-8)	<2(-7)	<2(-7)
^{58}Co	<9(-8)	<5(-8)	<2(-7)	<1(-7)
^{60}Co	<3(-7)	<2(-7)	<3(-7)	<2(-7)
^{91}Sr	<5(-7)	<3(-7)	<3(-7)	<5(-7)
^{110m}Ag	<2(-7)	<7(-8)	<8(-8)	<1(-7)
^{129}Te	<6(-6)	<3(-6)	<2(-6)	<3(-5)

Table 3.87 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time			
	10-10-82 0215	10-13-82 1150	10-13-82 1603	10-19-82 1150
^{131m}Te	<5(-7)	<3(-7)	<4(-7)	<4(-7)
^{139}Ba	<1(-6)	<6(-7)	<6(-7)	<6(-6)
^{152}Eu	<4(-7)	<2(-7)	<2(-7)	<5(-7)

* Radionuclide not measured.

Table B.3-88
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 6/8/82
Time: 1048

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{133}I	<3(-8)	<2(-7)	a	<6(-8)
^{135}I	<2(-6)	<6(-6)	a	<4(-7)
^{137}Cs	2.7 ± 0.7 (-8)	<2(-7)	a	<1(-7)
^{24}Na	<7(-8)	<3(-7)	a	7 ± 3 (-8)
^{51}Cr	<8(-8)	<8(-7)	a	<5(-7)
^{54}Mn	<2(-8)	<2(-7)	a	<6(-8)

a. Sum not calculated due to large less-than values.

Table B.3-88 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 10/13/82
Time: 1150

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<4(-8)	<2(-7)	a	<6(-8)
^{132}I	<8(-7)	<7(-5)	a	<2(-7)
^{133}I	<3(-8)	<3(-7)	a	<7(-8)
^{134}I	*	*	*	<3(-7)
^{135}I	<4(-7)	<3(-6)	a	<2(-7)
^{138}Cs	*	*	*	8 ± 4 (-7)
^{24}Na	<4(-8)	<2(-7)	a	<5(-8)
^{51}Cr	<2(-7)	<2(-6)	a	<4(-7)
^{54}Mn	4.5 ± 0.3 (-7)	<2(-7)	a	<7(-8)
^{56}Mn	<2(-6)	<2(-4)	a	<4(-7)
^{59}Fe	1.2 ± 0.2 (-7)	<2(-7)	a	<7(-8)
^{58}Co	4 ± 1 (-8)	<2(-7)	a	<5(-8)
^{60}Co	3.5 ± 0.3 (-7)	1.7 ± 0.2 (-6)	2.0 ± 0.2 (-6)[b]	<2(-7)
^{91}Sr	<3(-7)	<3(-6)	a	<3(-7)

Table B.3-88 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 10/13/82
Time: 1150

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{110m}Ag	<2(-8)	<2(-7)	a	<7(-8)
^{139}Ba	<3(-5)	*	a, *	<6(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-88 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 10/13/82
Time: 1603

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<2(-8)	<2(-7)	a	<2(-7)
^{132}I	<2(-5)	<5(-5)	a	<2(-7)
^{133}I	<4(-8)	<3(-7)	a	<2(-7)
^{134}I	*	*	*	<3(-7)
^{135}I	<5(-7)	<3(-6)	a	<3(-7)
^{89}Rb	*	*	*	<2(-6)
^{138}Cs	*	*	*	<3(-7)
^{24}Na	<2(-8)	<2(-7)	a	<7(-8)
^{51}Cr	<9(-8)	<8(-7)	a	<6(-7)
^{54}Mn	7 ± 1 (-8)	<2(-7)	a	<1(-7)
^{56}Mn	<3(-5)	<5(-5)	a	<6(-7)
^{59}Fe	<4(-8)	<2(-7)	a	<2(-7)
^{58}Co	<2(-8)	<2(-7)	a	<2(-7)
^{60}Co	2.2 ± 0.2 (-7)	<3(-7)	a	<3(-7)
^{91}Sr	<4(-7)	<2(-6)	a	<3(-7)

Table B.3-88 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

	Date: 10-13-82 Time: 1603			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{110m}Ag	<3(-8)	<2(-7)	a	<8(-8)
^{139}Ba	*	*	*	<6(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-89
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-25-82 0931	3-26-82 0820	4-6-82 1012	4-11-82 0934	4-14-82 1743	4-20-82 1050
^{131}I	1.06 ± 0.01(-4)	1.05 ± 0.03(-4)	7.64 ± 0.07(-5)	9.23 ± 0.05(-5)	1.07 ± 0.03(-4)	8.55 ± 0.04(-5)
^{132}I	2.86 ± 0.04(-3)	2.92 ± 0.03(-3)	1.82 ± 0.01(-3)	1.96 ± 0.02(-3)	2.08 ± 0.01(-3)	1.84 ± 0.01(-3)
^{133}I	1.31 ± 0.01(-3)	1.31 ± 0.01(-3)	1.01 ± 0.01(-3)	1.10 ± 0.01(-3)	1.1 ± 0.1 (-3)	1.08 ± 0.01(-3)
^{134}I	8.61 ± 0.07(-3)	8.68 ± 0.05(-3)	5.23 ± 0.05(-3)	5.4 ± 0.2 (-3)	5.62 ± 0.05(-3)	4.86 ± 0.04(-3)
^{135}I	2.91 ± 0.03(-3)	3.25 ± 0.03(-3)	2.30 ± 0.02(-3)	2.41 ± 0.02(-3)	2.63 ± 0.02(-3)	2.23 ± 0.03(-3)
^{88}Rb	<3(-3)	5 ± 2 (-4)	<2(-2)	*	<2(-3)	<2(-3)
^{89}Rb	2.8 ± 0.7 (-3)	3.31 ± 0.08(-3)	*	*	<2(-2)	<7(-3)
^{134}Cs	<5(-7)	<8(-8)	<9(-8)	<1(-7)	<8(-6)	<2(-7)
^{137}Cs	<7(-7)	<2(-7)	<2(-7)	<2(-7)	<4(-5)	<2(-7)
^{138}Cs	3.09 ± 0.07(-3)	2.72 ± 0.03(-3)	4.1 ± 0.1 (-3)	*	3.06 ± 0.06(-3)	2.53 ± 0.07(-3)
^{139}Cs	*	1.0 ± 0.3 (-3)	*	*	*	*
^{24}Na	1.2 ± 0.3 (-6)	<3(-6)	<9(-7)	8 ± 3 (-7)	<2(-6)	9 ± 3 (-7)
^{51}Cr	<7(-6)	<2(-6)	1.1 ± 0.5 (-6)	<4(-6)	<4(-5)	<2(-6)
^{54}Mn	<8(-7)	<2(-7)	<2(-7)	<2(-7)	<5(-6)	<2(-7)
^{59}Fe	<8(-7)	<2(-7)	<3(-7)	<3(-7)	<2(-5)	<3(-7)
^{58}Co	<7(-7)	<7(-8)	<6(-8)	<2(-7)	3.2 ± 0.8 (-5)	3 ± 1 (-7)
^{60}Co	6 ± 2 (-7)	<2(-7)	2 ± 1 (-7)	<2(-7)	<5(-6)	<2(-7)

Table B.3-89 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	3-25-82 0931	3-26-82 0820	4-6-82 1012	4-11-82 0934	4-14-82 1743	4-20-82 1050
^{65}Zn	<2(-6)	<2(-7)	<3(-7)	<3(-7)	<2(-5)	<2(-7)
^{91}Sr	4.36 ± 0.07(-4)	3.8 ± 0.2 (-4)	3.5 ± 0.2 (-4)	3.91 ± 0.08(-4)	4.64 ± 0.08(-4)	3.66 ± 0.06(-4)
^{91m}Y	<7(-5)	4 ± 2 (-5)	<2(-4)	<5(-4)	*	<3(-5)
^{93}Y	5 ± 2 (-5)	5 ± 2 (-4)	7 ± 3 (-5)	<6(-5)	<9(-5)	<6(-5)
^{95}Nb	<4(-7)	<2(-7)	<2(-7)	<1(-7)	4.0 ± 0.5 (-5)	<2(-7)
^{99}Mo	<8(-6)	<3(-6)	<4(-6)	<5(-6)	3 ± 1 (-5)	3 ± 1 (-6)
^{129}Te	1.1 ± 0.2 (-3)	1.0 ± 0.2 (-3)	<2(-3)	<2(-3)	<1(-3)	5 ± 1 (-4)
^{131m}Te	<3(-6)	<6(-6)	<3(-6)	<3(-6)	<2(-5)	<5(-6)
^{132}Te	<9(-7)	<6(-7)	<6(-7)	<6(-7)	<1(-5)	<7(-7)
^{139}Ba	3.66 ± 0.05(-3)	3.20 ± 0.03(-3)	3.17 ± 0.02(-3)	3.70 ± 0.07(-3)	3.47 ± 0.03(-3)	2.96 ± 0.04(-3)
^{140}Ba	2.2 ± 0.1 (-5)	1.78 ± 0.04(-5)	1.96 ± 0.05(-5)	1.57 ± 0.06(-5)	<4(-5)	1.92 ± 0.07(-5)
^{140}La	<7(-6)	<7(-6)	<3(-6)	<4(-7)	<4(-6)	<4(-6)
^{141}Ce	<2(-6)	4.9 ± 0.9 (-7)	5 ± 1 (-7)	6 ± 2 (-7)	<7(-6)	1.5 ± 0.1 (-6)

* Radionuclide not measured.

Table B.3-89 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-28-82 1445	10-2-82 2047	10-4-82 0920	10-6-82 1711	10-19-82 1204
^{131}I	<7(-7)	<2(-7)	<5(-7)	1.09 ± 0.03(-5)	3.0 ± 0.1 (-5)
^{132}I	<2(-4)	*	<4(-7)	1.50 ± 0.02(-4)	3.26 ± 0.04(-4)
^{133}I	<2(-6)	<6(-7)	<3(-7)	1.71 ± 0.01(-4)	4.56 ± 0.04(-4)
^{134}I	*	*	<5(-7)	5.38 ± 0.07(-4)	2.46 ± 0.02(-3)
^{135}I	<9(-6)	<2(-5)	<6(-7)	3.76 ± 0.07(-4)	1.06 ± 0.01(-3)
^{88}Rb	*	*	<7(-6)	2.5 ± 0.2 (-4)	3.8 ± 0.9 (-4)
^{89}Rb	*	*	<7(-6)	1.93 ± 0.03(-3)	2.39 ± 0.08(-3)
^{134}Cs	1.5 ± 0.2 (-6)	<2(-7)	<2(-7)	<3(-7)	<2(-6)
^{137}Cs	2.1 ± 0.4 (-6)	<3(-7)	<2(-7)	<5(-6)	<6(-6)
^{138}Cs	*	*	<2(-6)	2.33 ± 0.02(-3)	2.67 ± 0.02(-3)
^{139}Cs	*	*	<3(-4)	3.7 ± 0.4 (-3)	<2(-2)
^{24}Na	<2(-7)	<4(-7)	<2(-7)	<3(-7)	<7(-7)
^{51}Cr	<4(-6)	<2(-6)	<2(-6)	<4(-6)	<5(-5)
^{54}Mn	3.3 ± 0.1 (-5)	8 ± 1 (-7)	4 ± 1 (-7)	<3(-7)	<2(-6)
^{59}Fe	<2(-6)	<3(-7)	<3(-7)	<6(-7)	<5(-6)
^{58}Co	1.40 ± 0.05(-5)	5 ± 2 (-7)	3.6 ± 0.8 (-7)	<4(-7)	<9(-6)
^{60}Co	2.74 ± 0.04(-4)	3.4 ± 0.3 (-6)	<8(-7)	<8(-7)	<2(-6)

Table B.3-89 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-28-82 1445	10-2-82 2047	10-4-82 0920	10-6-82 1711	10-19-82 1204
^{65}Zn	1.01 ± 0.09(-5)	<7(-7)	<5(-7)	<5(-7)	<4(-6)
^{91}Sr	<9(-6)	<9(-6)	<5(-7)	1.68 ± 0.03(-4)	1.71 ± 0.03(-4)
^{91m}Y	*	*	<4(-7)	1.4 ± 0.3 (-5)	<3(-5)
^{93}Y	<3(-5)	<3(-5)	<3(-6)	<2(-5)	<4(-5)
^{95}Nb	<7(-7)	<2(-7)	<2(-7)	1.7 ± 0.2 (-5)	2.8 ± 0.2 (-5)
^{99}Mo	<5(-6)	<2(-6)	<2(-6)	<3(-6)	2.7 ± 0.6 (-5)
^{129}Te	*	*	<6(-6)	1.6 ± 0.5 (-4)	3.4 ± 0.3 (-4)
^{131m}Te	<5(-6)	<2(-6)	<2(-6)	<2(-6)	<2(-5)
^{132}Te	<4(-7)	<2(-7)	<2(-7)	2.9 ± 0.2 (-5)	8 ± 1 (-6)
^{139}Ba	*	*	<9(-7)	2.31 ± 0.02(-3)	2.27 ± 0.01(-3)
^{140}Ba	<2(-6)	<7(-7)	<8(-7)	8.7 ± 0.6 (-6)	1.0 ± 0.3 (-5)
^{140}La	<2(-7)	<2(-7)	<1(-7)	<5(-7)	<9(-7)

* Radionuclide not measured.

Table B.3-90
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 1445

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<4(-8)	<6(-7)	a	<7(-7)
^{132}I	*	*	*	<2(-4)
^{133}I	<2(-5)	<6(-5)	a	<2(-6)
^{134}I	*	*	*	*
^{135}I	*	*	*	<9(-6)
^{134}Cs	1.2 ± 0.1 (-7)	1.8 ± 0.2 (-6)	1.9 ± 0.2 (-6)	1.5 ± 0.2 (-6)
^{137}Cs	1.7 ± 0.2 (-7)	2.1 ± 0.3 (-6)	2.3 ± 0.3 (-6)	2.1 ± 0.4 (-6)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	*	<7(-5)	*	<2(-7)
^{51}Cr	<2(-7)	<8(-6)	a	<4(-6)
^{54}Mn	3.64 ± 0.05(-6)	2.98 ± 0.07(-5)	3.34 ± 0.07(-5)	3.3 ± 0.1 (-5)
^{59}Fe	1.5 ± 0.4 (-7)	<3(-6)	a	<2(-6)
^{58}Co	4.0 ± 0.2 (-7)	1.5 ± 0.1 (-5)	1.5 ± 0.1 (-5)	1.40 ± 0.05(-5)
^{60}Co	8.25 ± 0.08(-6)	2.84 ± 0.04(-4)	2.92 ± 0.04(-4)	2.74 ± 0.04(-4)
^{65}Zn	2.7 ± 0.4 (-7)	1.36 ± 0.09(-5)	1.39 ± 0.09(-5)	1.01 ± 0.09(-5)
^{91}Sr	*	*	*	<9(-6)
^{91m}Y	*	*	*	*

Table B.3-90 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 1445

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{93}Y	*	*	*	*
<3(-5)				
^{95}Nb	<6(-8)	<6(-7)	a	<7(-7)
^{99}Mo	<2(-6)	<2(-5)	a	<5(-6)
^{129}Te	*	*	*	*
^{131m}Te	<2(-5)	<9(-5)	a	<5(-6)
^{132}Te	<2(-7)	<2(-6)	a	<4(-7)
^{139}Ba	*	*	*	*
^{140}Ba	<2(-7)	<3(-6)	a	<2(-6)
^{140}La	<4(-7)	<3(-6)	a	<2(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-90 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-6-82
Time: 1711

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<3(-8)	1.04 ± 0.01(-5)	1.04 ± 0.01(-5)	1.12 ± 0.06(-5)
^{132}I	*	*	*	<2(-4)
^{133}I	6 ± 2 (-8)	1.64 ± 0.02(-4)	1.64 ± 0.02(-4)[b]	1.90 ± 0.03(-4)
^{134}I	*	*	*	*
^{135}I	<2(-6)	3.35 ± 0.04 (-4)	3.36 ± 0.04(-4)[b]	3.79 ± 0.08(-4)
^{134}Cs	<3(-8)	<7(-8)	a	<7(-7)
^{137}Cs	<3(-8)	<2(-7)	a	<5(-7)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<6(-8)	<2(-7)	a	<3(-7)
^{51}Cr	<2(-7)	<8(-7)	a	<4(-6)
^{54}Mn	3 ± 1 (-8)	<4(-6)	a	<5(-7)
^{59}Fe	<4(-8)	<2(-7)	a	<8(-7)
^{58}Co	<3(-8)	<2(-7)	a	<8(-7)
^{60}Co	1.1 ± 0.2 (-7)	<5(-7)	a	<8(-7)
^{65}Zn	<5(-8)	<3(-7)	a	<8(-7)
^{91}Sr	5 ± 2 (-7)	1.23 ± 0.02(-4)	1.24 ± 0.02(-4)[b]	1.98 ± 0.05(-4)
^{91m}Y	*	*	*	*

Table B.3-90 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN HEATER DRAIN DEAERATOR TANK OUTLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10-6-82 Time: 1711			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{93}Y	<2(-6)	<2(-5)	a	<3(-5)
^{95}Nb	<2(-8)	<2(-7)	a	<6(-7)
^{99}Mo	<2(-7)	<2(-6)	a	<4(-6)
^{129}Te	*	*	*	*
^{131m}Te	<2(-7)	<8(-7)	a	<3(-6)
^{132}Te	<3(-8)	<2(-7)	a	<5(-7)
^{139}Ba	*	*	*	*
^{140}Ba	1.1 ± 0.3 (-7)	6.5 ± 0.3 (-6)	6.6 ± 0.3 (-6)[b]	1.04 ± 0.09(-5)
^{140}La	2.8 ± 0.1 (-7)	<8(-7)	a	<1(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-91
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time 3-15-82 0856	3-25-82 0934	3-26-82 0820	4-6-82 1011	4-11-82 0938	4-14-82 1745
^{131}I	4.55 ± 0.03(-5)	2.4 ± 0.2 (-5)	2.00 ± 0.02(-5)	1.54 ± 0.01(-5)	1.76 ± 0.02(-5)	2.1 ± 0.1 (-5)
^{132}I	3.90 ± 0.04(-4)	4.55 ± 0.05(-4)	4.37 ± 0.06(-4)	3.57 ± 0.05(-4)	*	3.91 ± 0.05(-4)
^{133}I	2.04 ± 0.02(-4)	2.4 ± 0.2 (-4)	2.37 ± 0.01(-4)	1.87 ± 0.02(-4)	2.12 ± 0.04(-4)	2.33 ± 0.04(-4)
^{134}I	1.11 ± 0.01(-3)	1.29 ± 0.01(-3)	1.27 ± 0.01(-3)	1.03 ± 0.01(-3)	*	1.06 ± 0.01(-3)
^{135}I	4.62 ± 0.04(-4)	5.30 ± 0.05(-4)	5.29 ± 0.06(-4)	4.2 ± 0.2 (-4)	4.6 ± 0.2 (-4)	5.05 ± 0.06(-4)
^{88}Rb	<7(-4)	<3(-4)	<7(-5)	<4(-3)	*	<3(-3)
^{89}Rb	<9(-4)	5.0 ± 0.3 (-4)	4.2 ± 0.3 (-4)	*	*	<3(-3)
^{134}Cs	1.3 ± 0.3 (-7)	<3(-6)	<3(-7)	<8(-8)	<2(-7)	<2(-6)
^{137}Cs	<1(-7)	<1(-5)	<2(-7)	1.2 ± 0.4 (-7)	<1(-7)	<4(-6)
^{138}Cs	6.1 ± 0.2 (-4)	5.06 ± 0.09(-4)	4.09 ± 0.09(-4)	7.4 ± 0.4 (-4)	*	6.0 ± 0.3 (-4)
^{139}Cs	*	<7(-3)	<3(-3)	*	*	*
^{24}Na	<4(-7)	<9(-7)	<4(-7)	<4(-7)	<8(-7)	<3(-7)
^{51}Cr	<9(-7)	<4(-5)	<9(-7)	<2(-6)	<2(-6)	<4(-5)
^{54}Mn	<2(-7)	<4(-6)	<1(-7)	<2(-7)	<2(-7)	<3(-6)
^{59}Fe	<2(-7)	<7(-6)	<2(-7)	<2(-7)	<2(-7)	<6(-6)
^{58}Co	<6(-8)	1.0 ± 0.3 (-5)	<1(-7)	<7(-8)	<6(-8)	8 ± 1 (-6)
^{60}Co	<2(-7)	<2(-6)	<3(-7)	<3(-7)	<2(-7)	<2(-6)

Table B.3-91 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time					
	3-15-82 0856	3-25-82 0934	3-26-82 0820	4-6-82 1011	4-11-82 0938	4-14-82 1745
^{65}Zn	<3(-7)	<6(-6)	3 ± 1 (-7)	<2(-7)	<3(-7)	<8(-6)
^{91}Sr	6.7 ± 0.1 (-5)	7.5 ± 0.3 (-5)	7.2 ± 0.2 (-5)	7.6 ± 0.5 (-5)	8.0 ± 0.4 (-5)	7.8 ± 0.4 (-5)
^{91m}Y	<2(-5)	<8(-6)	<8(-6)	<5(-5)	*	<5(-5)
^{93}Y	<3(-5)	<3(-5)	2.8 ± 0.9 (-5)	<4(-5)	<4(-5)	<8(-5)
^{95}Nb	<8(-8)	2.1 ± 0.1 (-5)	<8(-8)	<9(-8)	<8(-8)	8 ± 1 (-6)
^{99}Mo	<2(-6)	<4(-5)	<2(-6)	<2(-6)	<4(-6)	1.0 ± 0.4 (-5)
^{129}Te	<3(-4)	<4(-4)	<4(-4)	1.7 + 0.5 (-4)	*	<3(-4)
^{131m}Te	<1(-6)	<2(-5)	<8(-7)	<2(-6)	<2(-6)	<1(-5)
^{132}Te	<3(-7)	<3(-6)	<5(-7)	<4(-7)	<3(-7)	<3(-6)
^{139}Ba	6.21 ± 0.09(-4)	6.84 ± 0.07(-4)	6.16 ± 0.09(-4)	7.4 ± 0.1 (-4)	*	7.6 ± 0.1 (-4)
^{140}Ba	2.9 ± 0.2 (-6)	<2(-5)	3.4 ± 0.2 (-6)	3.1 ± 0.2 (-6)	2.9 ± 0.3 (-6)	<2(-5)
^{140}La	<7(-7)	<2(-6)	1.5 ± 0.7 (-6)	<6(-7)	<5(-7)	<3(-6)
^{141}Ce	<4(-7)	<3(-6)	3 ± 1 (-7)	<3(-7)	<4(-7)	<4(-6)

* Radionuclide not measured.

Table B.3-91 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time 4-20-82 1033	9-28-82 1445	9-29-82 0920	9-30-82 0915	10-2-82 2045	10-4-82 0920
^{131}I	1.73 ± 0.02(-5)	<3(-7)	<2(-7)	<8(-8)	<2(-7)	<2(-7)
^{132}I	3.89 ± 0.06(-4)	<2(-4)	<7(-7)	<2(-7)	*	<3(-7)
^{133}I	2.11 ± 0.02(-4)	<6(-7)	<3(-7)	<1(-7)	<4(-7)	<2(-7)
^{134}I	1.22 ± 0.01(-3)	*	<4(-6)	<4(-7)	*	<3(-7)
^{135}I	4.40 ± 0.09(-4)	<5(-6)	<5(-7)	<4(-7)	<2(-5)	<3(-7)
^{88}Rb	<2(-3)	*	*	<2(-5)	*	<2(-5)
^{89}Rb	<3(-3)	*	*	<6(-6)	*	<4(-6)
^{134}Cs	<2(-7)	9 ± 1 (-7)	<4(-7)	<2(-7)	<8(-8)	<2(-7)
^{137}Cs	<2(-7)	1.2 ± 0.2 (-6)	<3(-7)	<2(-7)	<2(-7)	<2(-7)
^{138}Cs	<5(-4)	*	<2(-5)	<2(-5)	*	3.8 ± 0.4 (-6)
^{139}Cs	*	*	*	<2(-4)	*	<8(-5)
^{24}Na	<3(-7)	<3(-7)	<8(-8)	<1(-7)	<3(-7)	<8(-8)
^{51}Cr	2.4 ± 0.8 (-6)	<2(-6)	<2(-6)	<7(-7)	<6(-7)	<2(-6)
^{54}Mn	<2(-7)	1.44 ± 0.03(-5)	3.05 ± 0.02(-6)	<2(-7)	<2(-7)	<2(-7)
^{59}Fe	<3(-7)	<8(-7)	<5(-7)	<2(-7)	<2(-7)	<2(-7)
^{58}Co	<2(-7)	6.3 ± 0.3 (-6)	1.3 ± 0.2 (-6)	<9(-8)	<7(-8)	<1(-7)
^{60}Co	<4(-7)	1.15 ± 0.02(-4)	2.37 ± 0.04(-5)	<3(-7)	<4(-7)	<3(-7)

Table B.3-91 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time					
	4-20-82 1033	9-28-82 1445	9-29-82 0920	9-30-82 0915	10-2-82 2045	10-4-82 0920
^{65}Zn	<4(-7)	3.8 ± 0.5 (-6)	<5(-7)	<3(-7)	<3(-7)	<2(-7)
^{91}Sr	7.3 ± 0.3 (-5)	<6(-6)	<9(-7)	<3(-7)	<9(-6)	<4(-7)
^{91m}Y	<2(-5)	*	<4(-6)	<3(-7)	*	<3(-7)
^{93}Y	<3(-5)	<1(-5)	<3(-6)	<2(-6)	<2(-5)	<2(-6)
^{95}Nb	<2(-7)	<5(-7)	<2(-7)	<2(-7)	<7(-8)	<9(-7)
^{99}Mo	<2(-6)	<4(-6)	<2(-6)	<7(-7)	<8(-7)	<7(-7)
^{129}Te	<4(-4)	*	<2(-5)	<2(-6)	*	<4(-6)
^{131m}Te	<2(-6)	<3(-6)	1.1 ± 0.5 (-6)	<5(-7)	<9(-7)	<5(-7)
^{132}Te	<4(-7)	<3(-7)	<2(-7)	<2(-7)	<9(-8)	<3(-7)
^{139}Ba	8.2 ± 0.1 (-4)	*	<6(-6)	<2(-6)	*	<2(-6)
^{140}Ba	3.0 ± 0.4 (-6)	<2(-6)	<6(-7)	<3(-7)	<3(-7)	<4(-7)
^{140}La	<4(-7)	<2(-7)	<2(-7)	<2(-7)	<5(-8)	<2(-7)
^{141}Ce	<3(-7)	<4(-7)	<4(-7)	<2(-7)	<2(-7)	<2(-7)

* Radionuclide not measured.

Table B.3-91 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time 10-6-82 1709	10-19-82 1202
^{131}I	1.8 ± 0.1 (-6)	6.1 ± 0.1 (-6)
^{132}I	2.19 ± 0.06(-5)	7.6 ± 0.2 (-5)
^{133}I	2.66 ± 0.06(-5)	1.09 ± 0.01(-4)
^{134}I	7.9 ± 0.1 (-5)	*
^{135}I	6.1 ± 0.2 (-5)	2.50 ± 0.02(-4)
^{88}Rb	<3(-5)	*
^{89}Rb	2.18 ± 0.08(-4)	*
^{134}Cs	<9(-7)	<4(-7)
^{137}Cs	<7(-7)	<3(-7)
^{138}Cs	3.33 ± 0.05(-4)	*
^{139}Cs	<5(-4)	*
^{24}Na	<5(-7)	<2(-7)
^{51}Cr	<1(-5)	<3(-6)
^{54}Mn	<2(-6)	<9(-7)
^{59}Fe	<2(-6)	<4(-7)
^{58}Co	<7(-7)	<2(-7)
^{60}Co	<9(-7)	<5(-7)

Table B.3-91 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time 10-6-82 1709	10-19-82 1202
^{65}Zn	<2(-6)	<5(-7)
^{91}Sr	2.7 ± 0.1 (-5)	4.0 ± 0.1 (-5)
^{91m}Y	<4(-6)	*
^{93}Y	<2(-5)	<6(-6)
^{95}Nb	<3(-6)	<3(-7)
^{99}Mo	<1(-5)	<5(-6)
^{129}Te	<4(-5)	<8(-4)
^{131m}Te	<3(-6)	<9(-7)
^{132}Te	2.4 ± 0.4 (-6)	<4(-7)
^{139}Ba	3.65 ± 0.05(-4)	5.0 ± 0.7 (-4)
^{140}Ba	<3(-6)	2.8 ± 0.3 (-6)
^{140}La	<5(-7)	<3(-7)
^{141}Ce	<2(-6)	<4(-7)

* Radionuclide not measured.

Table B.3-92
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 1445

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<3(-8)	<3(-7)	a	<3(-7)
^{132}I	*	*	*	<2(-4)
^{133}I	<5(-8)	<9(-7)	a	<6(-7)
^{134}I	*	*	*	*
^{135}I	<2(-6)	<6(-5)	a, *	<5(-6)
^{134}Cs	4.9 ± 0.7 (-8)	7.9 ± 0.9 (-7)	8.4 ± 0.9 (-7)	9 ± 1 (-7)
^{137}Cs	8 ± 2 (-8)	9 ± 2 (-7)	1.0 ± 0.2 (-6)	1.2 ± 0.2 (-6)
^{138}Cs	*	*	*	*
^{24}Na	<7(-8)	<5(-7)	a	<3(-7)
^{51}Cr	<2(-7)	<3(-6)	a	<2(-6)
^{54}Mn	8.7 ± 0.2 (-7)	1.20 ± 0.02(-5)	1.29 ± 0.02(-5)[b]	1.44 ± 0.03(-5)
^{59}Fe	<9(-8)	<7(-7)	a	<8(-7)
^{58}Co	1.1 ± 0.1 (-7)	5.9 ± 0.2 (-6)	6.0 ± 0.2 (-6)	6.3 ± 0.3 (-6)
^{60}Co	2.20 ± 0.04(-6)	1.04 ± 0.02(-4)	1.60 ± 0.02(-4)[b]	1.15 ± 0.02(-4)
^{65}Zn	1.3 ± 0.2 (-7)	5.1 ± 0.4 (-6)	5.2 ± 0.4 (-6)[b]	3.8 ± 0.5 (-6)
^{91}Sr	<9(-7)	<5(-5)	a	<6(-6)
^{91m}Y	*	*	*	*

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

	Date: 9-28-82 Time: 1445			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{93}Y	<2(-6)	<6(-5)	a	<1(-5)
^{95}Nb	<2(-8)	<3(-7)	a	<5(-7)
^{99}Mo	<3(-7)	<3(-6)	a	<4(-6)
^{129}Te	*	*	*	*
^{131m}Te	<2(-7)	<4(-6)	a	<3(-6)
^{132}Te	<2(-8)	<3(-7)	a	<3(-7)
^{139}Ba	*	*	*	*
^{140}Ba	<7(-8)	<2(-6)	a	<2(-6)
^{140}La	<3(-8)	<4(-7)	a	<2(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 0920

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<3(-8)	<2(-7)	a	<2(-7)
^{132}I	*	*	*	<7(-7)
^{133}I	<8(-6)	<2(-5)	a	<3(-7)
^{134}I	*	*	*	<4(-6)
^{135}I	*	*	a, *	<5(-7)
^{134}Cs	<3(-8)	<4(-7)	a	<4(-7)
^{137}Cs	<3(-8)	<2(-7)	a	<3(-7)
^{24}Na	*	<1(-5)	a, *	<8(-8)
^{51}Cr	<1(-7)	<2(-6)	a	<2(-6)
^{54}Mn	5.2 ± 0.2 (-7)	2.3 ± 0.1 (-6)	2.8 ± 0.1 (-6)	3.05 ± 0.02(-6)
^{59}Fe	<5(-8)	<3(-7)	a	<5(-7)
^{58}Co	4.1 ± 0.9 (-8)	1.1 ± 0.1 (-6)	1.1 ± 0.1 (-6)	1.3 ± 0.2 (-6)
^{60}Co	1.10 ± 0.03(-6)	2.07 ± 0.03(-5)	2.18 ± 0.03(-5)	2.37 ± 0.04(-5)
^{65}Zn	6 ± 1 (-8)	1.0 ± 0.2 (-6)	1.1 ± 0.2 (-6)[b]	<5(-7)
^{91}Sr	*	*	a, *	<9(-7)
^{91m}Y	*	*	*	<4(-6)
^{93}Y	*	*	a, *	<3(-6)

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

	Date: 9-29-82 Time: 0920			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{95}Nb	<3(-8)	<3(-7)	a	<2(-7)
^{99}Mo	<9(-7)	<5(-6)	a	<2(-6)
^{129}Te	*	*	*	<2(-5)
^{131m}Te	<6(-6)	<1(-5)	a	1.1 ± 0.5 (-6)
^{132}Te	<5(-8)	<3(-7)	a	<2(-7)
^{139}Ba	*	*	*	<6(-6)
^{140}Ba	<2(-7)	<2(-6)	a	<6(-7)
^{140}La	<5(-7)	<9(-7)	a	<2(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 9-30-82
Time: 0915

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<2(-8)	<2(-7)	a	<8(-8)
^{132}I	*	*	*	<2(-7)
^{133}I	<1(-6)	<4(-6)	a	<1(-7)
^{134}I	*	*	*	<4(-7)
^{135}I	*	*	*	<4(-7)
^{134}Cs	<2(-8)	<2(-7)	a	<2(-7)
^{137}Cs	<2(-8)	<2(-7)	a	<2(-7)
^{138}Cs	*	*	*	<2(-5)
^{139}Cs	*	*	*	<2(-4)
^{24}Na	<5(-6)	<7(-6)	a	<1(-7)
^{51}Cr	<1(-7)	<8(-7)	a	<7(-7)
^{54}Mn	<3(-8)	<2(-7)	a	<2(-7)
^{59}Fe	<2(-8)	<2(-7)	a	<2(-7)
^{58}Co	<3(-8)	<1(-7)	a	<9(-8)
^{60}Co	<4(-8)	<2(-7)	a	<3(-7)
^{65}Zn	<4(-8)	<2(-7)	a	<3(-7)
^{91}Sr	*	<2(-4)	a, *	<3(-7)

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

	Date: 9-30-82 Time: 0915			
Nuclide	Filter	Filtrate	Sum	Grab Sample
^{91m}Y	*	*	*	<3(-7)
^{93}Y	*	<6(-4)	a, *	<2(-6)
^{95}Nb	<2(-8)	<9(-8)	a	<2(-7)
^{99}Mo	<4(-7)	<2(-6)	a	<7(-7)
^{129}Te	*	*	*	<2(-6)
^{131m}Te	<2(-6)	<4(-6)	a	<5(-7)
^{132}Te	<4(-8)	<2(-7)	a	<2(-7)
^{139}Ba	*	*	*	<2(-6)
^{140}Ba	<2(-7)	<5(-7)	a	<3(-7)
^{140}La	<2(-7)	<7(-7)	a	<2(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 10-6-82
Time: 1709

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}I	<3(-8)	1.86 ± 0.08(-6)	1.88 ± 0.08(-6)	1.8 ± 0.1 (-6)
^{132}I	*	*	*	2.19 ± 0.06(-5)
^{133}I	<5(-8)	3.08 ± 0.06(-5)	3.08 ± 0.06(-5)[b]	2.66 ± 0.06(-5)
^{134}I	*	*	*	7.9 ± 0.1 (-5)
^{135}I	<3(-6)	6.4 ± 0.8 (-5)	6.6 ± 0.8 (-5)	6.1 ± 0.2 (-5)
^{134}Cs	<3(-8)	<1(-7)	a	<9(-7)
^{137}Cs	<3(-8)	<2(-7)	a	<7(-7)
^{138}Cs	*	*	*	3.33 ± 0.05(-4)
^{139}Cs	*	*	*	<5(-4)
^{24}Na	<1(-7)	<6(-7)	a	<5(-7)
^{51}Cr	<2(-7)	<1(-6)	a	<1(-5)
^{54}Mn	1.1 ± 0.1 (-7)	<2(-7)	a	<2(-6)
^{59}Fe	<3(-8)	<2(-7)	a	<2(-6)
^{58}Co	<2(-8)	<2(-7)	a	<7(-7)
^{60}Co	1.7 ± 0.2 (-7)	<3(-7)	a	<9(-7)
^{65}Zn	<4(-8)	<2(-7)	a	<2(-6)
^{91}Sr	<7(-7)	2.5 ± 0.3 (-5)	2.5 ± 0.3 (-5)	2.7 ± 0.1 (-5)

Table B.3-92 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN FEEDWATER FILTERED SAMPLES
(microcuries/gram)

Date: 10-6-82
Time: 1709

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{91m}Y	*	*	*	<4(-6)
^{93}Y	<2(-6)	<3(-5)	a	<2(-5)
^{95}Nb	<2(-8)	<1(-7)	a	<3(-6)
^{99}Mo	<2(-7)	<2(-6)	a	<1(-5)
^{129}Te	*	*	*	<4(-5)
^{131m}Te	<3(-7)	<2(-6)	a	<3(-6)
^{132}Te	<2(-8)	<2(-7)	a	2.4 ± 0.4 (-6)
^{139}Ba	*	*	*	3.65 ± 0.05(-4)
^{140}Ba	<6(-8)	8 ± 3 (-7)	8.3 ± 0.3 (-7)	<3(-6)
^{140}La	7 ± 1 (-8)	7.7 ± 0.8 (-7)	8.4 ± 0.8 (-7)[b]	<5(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-93
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS
IN HEATER DRAIN DEAERATOR TANK OUTLET
(microcuries/gram)

Nuclide	Date and Time 3-25-82 0931	3-26-82 0820
Cl-38	<2(-4)	<3(-5)
Ni-65	<6(-5)	<5(-5)
Sr-92	4.2 ± 0.2 (-4)	3.9 ± 0.2 (-4)
Y-92	<4(-4)	8 ± 4 (-5)
Nb-95m	1.7 ± 0.1 (-4)	3.8 ± 0.3 (-4)
Tc-99m	<8(-6)	<2(-5)
Tc-101	<2(-3)	<2(-4)
Tc-104	<8(-4)	<9(-5)
Ba-141	<5(-4)	2.5 ± 0.4 (-4)
Ba-142	3 ± 1 (-2)	<2(-3)
La-142	<7(-6)	<6(-5)

Table B.3-94
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS IN FEEDWATER
(microcuries/gram)

Nuclide	Date and Time 3-25-82 0934	3-26-82 0820
Cl-38	<6(-6)	<2(-5)
Ni-65	<7(-6)	<9(-6)
Sr-92	7.7 ± 0.2 (-5)	7.2 ± 0.2 (-5)
Y-92	<3(-5)	<4(-5)
Nb-95m	4.4 ± 0.3 (-5)	4.5 ± 0.5 (-5)
Tc-99m	<2(-6)	<4(-6)
Tc-101	<6(-5)	<7(-5)
Tc-104	<6(-5)	<6(-5)
Ba-141	<5(-4)	2.2 ± 0.4 (-5)
Ba-142	<1(-3)	<8(-4)
La-142	<2(-5)	<2(-5)

Table B.3-95
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER
CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date: 5/5/82 Time: 0900
^{84}Br	<4(-5)
^{131}I	7 ± 3 (-7)
^{132}I	7 ± 2 (-6)
^{133}I	5 ± 2 (-6)
^{134}I	9 ± 2 (-5)
^{135}I	<2(-5)
^{88}Rb	<3(-4)
^{89}Rb	<3(-4)
^{134}Cs	<6(-7)
^{136}Cs	<2(-6)
^{137}Cs	<2(-6)
^{138}Cs	<2(-5)
^{139}Cs	<6(-3)
^{24}Na	8.7 ± 0.2 (-4)
^{51}Cr	6.07 ± 0.06(-4)
^{54}Mn	8.1 ± 0.1 (-5)
^{56}Mn	3.01 ± 0.08(-4)
^{59}Fe	3.87 ± 0.09(-5)

Table B.3-95 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER
CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date: 5/5/82 Time: 0900
^{57}Co	<4(-7)
^{58}Co	2.37 ± 0.05(-5)
^{60}Co	6.43 ± 0.09(-5)
^{65}Zn	3.3 ± 0.6 (-6)
^{91}Sr	<2(-5)
^{91m}Y	<7(-6)
^{93}Y	<4(-5)
^{95}Zr	<3(-6)
^{95}Nb	<7(-7)
^{99}Mo	<2(-5)
^{103}Ru	<7(-7)
^{106}RuD	<1(-5)
^{110m}Ag	1.63 ± 0.06(-7)
^{124}Sb	<2(-6)
^{125}Sb	<2(-6)
^{129m}Te	<9(-6)
^{129}Te	<6(-5)
^{131m}Te	<2(-5)
^{131}Te	<7(-5)
^{132}Te	<8(-7)

Table B.3-95 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER
CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date: 5/5/82 Time: 0900
^{139}Ba	<2(-5)
^{140}Ba	<4(-6)
^{140}La	<2(-6)
^{141}Ce	<8(-7)
^{143}Ce	<4(-6)
^{144}Ce	<3(-6)
^{152}Eu	<2(-6)
^{154}Eu	<2(-6)
^{155}Eu	<2(-6)
^{187}W	<2(-5)
^{239}Np	<3(-6)

Table B.3-96
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-5-82 0902	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0908
^{84}Br	<2(-4)	<5(-3)	<1(-3)	<2(-5)	<6(-6)	<2(-5)
^{131}I	<1(-5)	<6(-7)	3 + 1 (-7)	5 ± 2 (-7)	<8(-7)	4 ± 2 (-6)
^{132}I	1.7 ± 0.4 (-5)	<3(-5)	7 ± 2 (-6)	1.1 ± 0.2 (-5)	9.4 ± 0.9 (-6)	1.7 ± 0.2 (-5)
^{133}I	<2(-5)	<6(-6)	2.4 ± 0.3 (-6)	<5(-6)	<2(-6)	7 ± 2 (-6)
^{134}I	9 ± 1 (-5)	<4(-4)	<2(-4)	9 ± 4 (-6)	7 ± 2 (-6)	3.4 ± 0.7 (-5)
^{135}I	<3(-5)	<3(-5)	<5(-6)	<2 (-5)	<6(-6)	<2(-5)
^{88}Rb	<2(-3)	*	*	<2(-4)	<2(-5)	<5(-5)
^{89}Rb	<8(-4)	*	*	<6(-5)	<2(-5)	<4(-5)
^{134}Cs	<1(-5)	<6(-7)	<3(-7)	<6(-7)	<6(-7)	<7(-7)
^{136}Cs	<9(-6)	<9(-7)	<5(-7)	<7(-7)	<1(-6)	<7(-7)
^{137}Cs	<1(-5)	6 ± 2 (-7)	<4(-7)	<9(-7)	<1(-6)	<4(-7)
^{138}Cs	<8(-5)	<3(-3)	<5(-4)	<3(-5)	<3(-6)	<2(-5)
^{139}Cs	<4(-2)	*	*	<2(-3)	<4(-4)	<2(-4)
^{24}Na	8.2 ± 0.1 (-4)	6.4 ± 0.1 (-4)	5.17 ± 0.06(-4)	3.6 ± 0.1 (-4)	1.03 ± 0.02(-4)	9.8 ± 0.2 (-4)
^{51}Cr	8.9 ± 0.4 (-4)	1.74 ± 0.02(-4)	1.24 ± 0.06(-4)	7.5 ± 0.2 (-5)	8.99 ± 0.07(-4)	6.4 ± 0.1 (-4)
^{54}Mn	1.92 ± 0.06(-4)	9.0 ± 0.1 (-5)	9.5 ± 0.1 (-5)	1.08 ± 0.01(-4)	4.10 ± 0.06(-5)	6.9 ± 0.9 (-6)
^{56}Mn	2.29 ± 0.03(-3)	1.79 ± 0.03(-3)	1.28 ± 0.02(-3)	9.0 ± 0.1 (-4)	4.9 ± 0.3 (-5)	1.97 ± 0.06(-4)
^{59}Fe	1.9 ± 0.1 (-4)	2.95 ± 0.07(-5)	1.7 ± 0.1 (-5)	6.3 ± 0.6 (-6)	8.2 ± 0.5 (-6)	7 ± 3 (-7)

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-5-82 0902	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0908
^{57}Co	<8(-6)	<3(-7)	<3(-7)	<3(-7)	<4(-7)	<3(-7)
^{58}Co	4.5 ± 0.3 (-5)	2.80 ± 0.05(-5)	3.04 ± 0.04(-5)	3.61 ± 0.05(-5)	1.59 ± 0.05(-5)	6.7 ± 0.3 (-6)
^{60}Co	1.12 ± 0.04(-4)	2.91 ± 0.05(-5)	3.04 ± 0.03(-5)	3.11 ± 0.05(-5)	1.71 ± 0.04(-5)	5.3 ± 0.3 (-6)
^{65}Zn	<2(-5)	<2(-6)	<2(-6)	<2(-6)	1.2 ± 0.5 (-6)	<2(-6)
^{91}Sr	<3(-5)	<2(-5)	<4(-6)	<1(-5)	<4(-6)	<2(-5)
^{91m}Y	<3(-5)	<3(-4)	3.1 ± 0.8 (-4)	<2(-5)	<2(-6)	<6(-6)
^{93}Y	<6(-5)	<4(-5)	<6(-6)	<4(-5)	<2(-5)	<6(-5)
^{95}Zr	<9(-6)	<8(-7)	<6(-7)	<1(-6)	<7(-7)	<1(-6)
^{95}Nb	<2(-5)	<6(-7)	<5(-7)	<6(-7)	<7(-7)	<1(-6)
^{99}Mo	<4(-5)	<2(-5)	<2(-5)	<8(-6)	1.0 ± 0.4 (-6)	3.8 ± 0.9 (-5)
^{103}Ru	<7(-6)	<2(-6)	6 ± 1 (-7)	<1(-6)	<5(-7)	<5(-7)
^{106}RuD	<7(-5)	<5(-6)	<3(-6)	<5(-6)	<5(-6)	<5(-6)
^{110m}Ag	<4(-5)	2.3 ± 0.3 (-6)	2.1 ± 0.2 (-6)	2.0 ± 0.3 (-6)	3.0 ± 0.4 (-6)	2.4 ± 0.2 (-6)
^{124}Sb	<9(-6)	7 ± 3 (-7)	<7(-7)	<8(-7)	<8(-7)	<2(-6)
^{125}Sb	<3(-5)	<1(-6)	<7(-7)	<2(-6)	<1(-6)	<8(-7)
^{129m}Te	<7(-5)	<9(-6)	<4(-6)	<6(-6)	<7(-6)	<9(-6)
^{129}Te	<2(-4)	<6(-4)	<4(-4)	<8(-5)	<2(-5)	<5(-5)
^{131m}Te	<3(-5)	<2(-5)	<3(-6)	<9(-6)	<6(-6)	<3(-5)
^{131}Te	<3(-4)	*	<2(-2)	<6(-5)	<2(-5)	<3(-5)
^{132}Te	<6(-6)	1.7 ± 0.8 (-6)	<2(-7)	<8(-7)	<8(-7)	<2(-6)

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	5-5-82 0902	5-5-82 1137	5-5-82 1328	5-5-82 1605	5-6-82 0859	5-11-82 0908
^{139}Ba	<4(-5)	<2(-4)	<3(-5)	<2(-5)	<6(-6)	<2(-5)
^{140}Ba	<3(-5)	<4(-6)	1.0 ± 0.5 (-7)	<3(-6)	3 ± 1 (-6)	<2(-6)
^{140}La	<1(-5)	<3(-6)	<8(-7)	2.2 ± 0.5 (-6)	<2(-6)	5 ± 2 (-6)
^{141}Ce	9 ± 4 (-6)	<7(-7)	<3(-7)	<6(-7)	<1(-6)	<2(-6)
^{143}Ce	<3(-5)	<4(-6)	<5(-7)	<4(-6)	<2(-6)	<8(-6)
^{144}Ce	<2(-4)	<4(-6)	<3(-6)	<2(-6)	<3(-6)	<4(-6)
^{152}Eu	<2(-5)	<2(-6)	<6(-7)	<2(-6)	<1(-6)	<9(-7)
^{154}Eu	<3(-5)	<8(-7)	<8(-7)	<7(-7)	<2(-6)	<5(-7)
^{155}Eu	<3(-5)	<2(-6)	<9(-7)	<2(-6)	<2(-6)	<2(-6)
^{187}W	8 ± 1 (-5)	2.1 ± 0.6 (-5)	7.1 ± 0.7 (-6)	1.9 ± 0.4 (-5)	<5(-6)	<2(-5)
^{239}Np	<2(-5)	<3(-6)	<2(-6)	<2(-6)	<5(-6)	<2(-5)

* Radionuclide not measured.

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-18-82 1256	5-25-82 1314	6-1-82 0910	6-7-82 1051	6-16-82 1207	7-1-82 0935
^{84}Br	1.3 ± 0.6 (-4)	<4(-4)	<6(-5)	<2(-5)	<9(-5)	<2(-4)
^{131}I	8 ± 3 (-7)	<7(-7)	<2(-6)	<2(-6)	<2(-6)	7 ± 2 (-7)
^{132}I	1.4 ± 0.2 (-5)	9 ± 2 (-6)	<3(-5)	4 ± 1 (-6)	2.1 ± 0.3 (-5)	<4(-5)
^{133}I	7 ± 1 (-6)	4.6 ± 0.5 (-6)	1.6 ± 0.5 (-5)	5.3 ± 0.5 (-6)	1.1 ± 0.2 (-5)	1.1 ± 0.4 (-5)
^{134}I	4 ± 1 (-5)	<6(-5)	5 ± 1 (-5)	5.1 ± 0.3 (-5)	5 ± 1 (-5)	<1(-4)
^{135}I	<3(-5)	1.2 ± 0.4 (-5)	<5(-5)	1.6 ± 0.2 (-5)	4 ± 1 (-5)	<5(-5)
^{88}Rb	<3(-3)	*	<3(-4)	<2(-4)	<5(-4)	8 ± 4 (-4)
^{89}Rb	<2(-3)	*	<2(-4)	<2(-4)	<3(-4)	<5(-4)
^{134}Cs	<5(-7)	<5(-7)	<4(-7)	<2(-6)	<3(-7)	<5(-7)
^{136}Cs	1.3 ± 0.4 (-6)	<8(-7)	<2(-6)	<2(-6)	<1(-6)	<6(-7)
^{137}Cs	<5(-7)	<6(-7)	<9(-7)	<3(-6)	<1(-6)	<3(-7)
^{138}Cs	<5(-5)	<2(-4)	<4(-5)	<2(-5)	<4(-5)	<6(-5)
^{139}Cs	*	*	<3(-3)	<3(-3)	<7(-3)	<2(-2)
^{24}Na	1.18 ± 0.01(-3)	1.32 ± 0.02(-3)	5.68 ± 0.07(-3)	3.43 ± 0.03(-3)	3.19 ± 0.05(-3)	9.7 ± 0.7 (-3)
^{51}Cr	6.42 ± 0.06(-4)	3.15 ± 0.03(-4)	9.37 ± 0.09(-4)	6.9 ± 0.1 (-4)	6.7 ± 0.3 (-4)	8.54 ± 0.08(-4)
^{54}Mn	5.7 ± 0.3 (-6)	1.8 ± 0.3 (-6)	4.0 ± 0.6 (-6)	1.1 ± 0.1 (-5)	6.4 ± 0.5 (-6)	1.95 ± 0.06(-5)
^{56}Mn	1.21 ± 0.04(-4)	9.3 ± 0.3 (-5)	9.2 ± 0.7 (-5)	8.0 ± 0.1 (-5)	1.00 ± 0.07(-4)	<6(-5)

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-18-82 1256	5-25-82 1314	6-1-82 0910	6-7-82 1051	6-16-82 1207	7-1-82 0935
^{59}Fe	<9(-7)	<7(-7)	1.2 ± 0.6 (-6)	<6(-6)	<5(-7)	1.20 ± 0.04(-5)
^{57}Co	<4(-7)	<3(-7)	<5(-7)	<1(-6)	<3(-7)	<3(-7)
^{58}Co	4.8 ± 0.3 (-6)	2.6 ± 0.6 (-6)	3.2 ± 0.5 (-6)	6.7 ± 0.6 (-6)	5.8 ± 0.5 (-6)	5.7 ± 0.3 (-6)
^{60}Co	4.1 ± 0.6 (-6)	2.2 ± 0.5 (-6)	2.3 ± 0.8 (-6)	6.0 ± 0.7 (-6)	6.3 ± 0.4 (-6)	1.23 ± 0.04(-5)
^{65}Zn	<8(-7)	<2(-6)	<1(-6)	<6(-6)	<9(-7)	9 ± 3 (-7)
^{91}Sr	<2(-5)	<9(-6)	<4(-5)	<6(-6)	<3(-5)	<8(-5)
^{91m}Y	<3(-5)	<4(-5)	<2(-5)	<2(-5)	<3(-5)	<3(-5)
^{93}Y	<2(-5)	<2(-5)	<8(-5)	<3(-5)	<7(-5)	<8(-5)
^{95}Zr	1.5 ± 0.7 (-6)	<8(-7)	<7(-7)	<3(-6)	<6(-7)	<6(-7)
^{95}Nb	<4(-7)	<5(-7)	<1(-6)	<2(-6)	<4(-7)	<5(-7)
^{99}Mo	<2(-5)	<9(-6)	<2(-5)	1.2 ± 0.3 (-5)	<5(-5)	<2(-5)
^{103}Ru	<6(-7)	<5(-7)	<5(-7)	<2(-6)	<4(-7)	<3(-7)
^{106}RuD	<6(-6)	<4(-6)	<6(-6)	<2(-5)	<3(-6)	<3(-6)
^{110m}Ag	3.4 ± 0.6 (-7)	5 ± 2 (-7)	1.5 ± 0.3 (-6)	<2(-5)	1.9 ± 0.2 (-6)	4.3 ± 0.8 (-6)
^{124}Sb	<9(-7)	<9(-7)	<1(-6)	<4(-6)	<7(-7)	<7(-7)
^{125}Sb	1.1 ± 0.6 (-6)	<9(-7)	<2(-6)	<5(-6)	<7(-7)	<7(-7)
^{129m}Te	<8(-6)	<4(-6)	<5(-6)	<2(-5)	<5(-6)	<5(-6)
^{129}Te	<8(-5)	<2(-4)	<1(-4)	<3(-5)	<8(-5)	<3(-4)
^{131m}Te	<8(-6)	<7(-6)	<4(-5)	<8(-6)	<3(-5)	<3(-5)
^{131}Te	<6(-4)	<2(-3)	<1(-5)	<5(-5)	<2(-4)	<3(-4)

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 5-18-82 1256	5-25-82 1314	6-1-82 0910	6-7-82 1051	6-16-82 1207	7-1-82 0935
^{132}Te	<9(-7)	<6(-7)	<2(-6)	<1(-6)	<3(-6)	<7(-7)
^{139}Ba	<2(-5)	<3(-5)	<2(-5)	5 ± 2 (-6)	<3(-5)	<4(-5)
^{140}Ba	8 ± 4 (-6)	<2(-6)	<3(-6)	<7(-6)	<3(-6)	<2(-6)
^{140}La	<3(-6)	<2(-6)	<3(-6)	<2(-6)	<6(-6)	<5(-6)
^{141}Ce	<8(-7)	<6(-7)	<2(-6)	<2(-6)	<9(-7)	<5(-7)
^{143}Ce	<3(-6)	<2(-6)	<7(-6)	<2(-6)	<2(-5)	<7(-6)
^{144}Ce	<4(-6)	<3(-6)	<6(-6)	<8(-6)	<3(-6)	<2(-6)
^{152}Eu	<2(-6)	<9(-7)	<2(-6)	<3(-6)	<8(-7)	<1(-6)
^{154}Eu	7 ± 3 (-7)	<1(-6)	<2(-6)	<4(-6)	<5(-7)	<6(-7)
^{155}Eu	<2(-6)	<2(-6)	<2(-6)	<5(-6)	<9(-7)	<8(-7)
^{187}W	<5(-6)	<4(-6)	<4(-5)	1.2 ± 0.2 (-5)	<2(-5)	<3(-5)
^{239}Np	<2(-6)	<3(-6)	<5(-6)	<6(-6)	<2(-5)	<5(-6)

* Radionuclide not measured.

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 7-7-82 0945	9-28-82 0950	10-10-82 0117	10-19-82 1132	11-3-82 1331
^{84}Br	<7(-5)	*	<2(-5)	<2(-4)	<4(-5)
^{131}I	1.0 ± 0.3 (-6)	<3(-7)	<3(-7)	<2(-6)	<5(-6)
^{132}I	3.7 ± 0.4 (-5)	*	<6(-7)	<2(-5)	2.6 ± 0.3 (-5)
^{133}I	<3(-5)	<8(-7)	<3(-7)	1.0 ± 0.2 (-5)	1.8 ± 0.2 (-5)
^{134}I	5.0 ± 0.8 (-5)	*	1.9 ± 0.2 (-5)	<9(-5)	6 ± 1 (-5)
^{135}I	2.5 ± 0.8 (-4)	<8(-6)	<7(-7)	<5(-5)	<5(-5)
^{88}Rb	<2(-4)	*	<8(-5)	<2(-3)	<2(-4)
^{89}Rb	<8(-5)	*	<1(-4)	<9(-4)	<7(-5)
^{134}Cs	<4(-7)	<5(-7)	<3(-7)	<5(-7)	<2(-6)
^{136}Cs	<7(-7)	<7(-7)	<4(-7)	<7(-7)	<2(-6)
^{137}Cs	<4(-7)	<7(-7)	<3(-7)	<6(-7)	<4(-6)
^{138}Cs	<3(-5)	*	<5(-6)	<7(-5)	<2(-5)
^{139}Cs	<1(-3)	*	*	<7(-2)	<9(-4)
^{24}Na	5.75 ± 0.09(-3)	<2(-7)	<2(-7)	4.11 ± 0.06(-3)	3.96 ± 0.04(-3)
^{51}Cr	7.08 ± 0.06(-4)	<3(-6)	6.2 ± 0.9 (-6)	2.1 ± 0.3 (-4)	3.4 ± 0.2 (-4)
^{54}Mn	6.7 ± 0.3 (-6)	4.55 ± 0.06(-5)	3.33 ± 0.05(-5)	1.4 ± 0.4 (-5)	<6(-6)
^{56}Mn	1.42 ± 0.06(-4)	<8(-4)	1.09 ± 0.04(-5)	<2(-4)	9 ± 1 (-5)

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	7-7-82 0945	9-28-82 0950	10-10-82 0117	10-19-82 1132	11-3-82 1331
^{59}Fe	9 ± 4 (-7)	7 ± 2 (-7)	5.43 ± 0.03(-6)	<2(-5)	<3(-5)
^{57}Co	<4(-7)	<5(-7)	<2(-7)	<3(-6)	<4(-6)
^{58}Co	5.8 ± 0.5 (-6)	1.65 ± 0.04(-5)	4.82 ± 0.02(-6)	<3(-6)	<7(-6)
^{60}Co	3.7 ± 0.3 (-6)	4.81 ± 0.08(-5)	2.84 ± 0.04(-5)	<7(-6)	9 ± 1 (-6)
^{65}Zn	<2(-6)	<7(-7)	<6(-7)	<2(-6)	<9(-6)
^{91}Sr	<3(-5)	<8(-6)	<8(-7)	<4(-5)	<3(-5)
^{91m}Y	<7(-6)	*	<2(-6)	<2(-5)	<2(-5)
^{93}Y	<6(-5)	<2(-5)	<5(-6)	<6(-5)	<6(-5)
^{95}Zr	<9(-7)	<7(-7)	<6(-7)	<7(-7)	<3(-6)
^{95}Nb	<5(-7)	<4(-7)	<3(-7)	<5(-7)	<3(-6)
^{99}Mo	<3(-5)	<3(-6)	<2(-6)	<2(-5)	<2(-5)
^{103}Ru	<9(-7)	<6(-7)	<4(-7)	<5(-7)	<2(-6)
^{106}RuD	<4(-6)	<3(-6)	<4(-6)	<6(-6)	<2(-5)
^{110m}Ag	<8(-7)	1.3 ± 0.1 (-6)	<4(-6)	5.1 ± 0.1 (-6)	<4(-6)
^{124}Sb	<9(-7)	<5(-7)	<3(-7)	<2(-6)	<4(-6)
^{125}Sb	<1(-6)	<8(-7)	9 ± 3 (-7)	<2(-6)	<4(-6)
^{129m}Te	<8(-6)	<3(-6)	<4(-6)	<7(-6)	<3(-5)
^{129}Te	<2(-4)	*	<2(-5)	<2(-4)	<9(-5)
^{131m}Te	<3(-5)	<3(-6)	<2(-6)	<2(-5)	<3(-5)

Table B.3-96 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	7-7-82 0945	9-28-82 0950	10-10-82 0117	10-19-82 1132	11-3-82 1331
^{131}Te	<6(-5)	*	<4(-5)	<2(-4)	<6(-5)
^{132}Te	<2(-6)	<3(-7)	<3(-7)	<2(-6)	<4(-6)
^{139}Ba	<3(-5)	*	<2(-6)	<3(-5)	<2(-5)
^{140}Ba	1.7 ± 0.8 (-6)	<2(-6)	<8(-7)	<2(-6)	<6(-6)
^{140}La	<6(-6)	<5(-7)	<2(-7)	<8(-7)	<4(-6)
^{141}Ce	<7(-7)	<3(-7)	<3(-7)	<9(-7)	<2(-6)
^{143}Ce	<5(-6)	<7(-7)	<5(-7)	<9(-6)	<9(-6)
^{144}Ce	<3(-6)	<2(-6)	<2(-6)	<3(-6)	<7(-6)
^{152}Eu	<2(-6)	<4(-7)	<7(-7)	<2(-6)	<5(-6)
^{154}Eu	<2(-6)	<7(-7)	<7(-7)	<2(-6)	<4(-6)
^{155}Eu	<2(-6)	<4(-7)	<8(-7)	<2(-6)	<3(-6)
^{187}W	<2(-5)	<3(-6)	<9(-7)	<3(-5)	<2(-5)
^{239}Np	<7(-6)	<7(-7)	<5(-7)	<4(-6)	<6(-6)

* Radionuclide not measured

Table 8.3-97
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1053

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-5)
^{131}I	<3(-8)	6 ± 2 (-7)	6 ± 2 (-7)	<2(-6)
^{132}I	*	*	*	4 ± 1 (-6)
^{133}I	<7(-8)	<2(-4)	a	5.3 ± 0.5 (-6)
^{134}I	*	*	*	5.1 ± 0.3 (-5)
^{135}I	<7(-7)	*	a, *	1.6 ± 0.2 (-5)
^{88}Rb	*	*	*	<2(-4)
^{89}Rb	*	*	*	<2(-4)
^{134}Cs	<4(-8)	<4(-7)	a	<2(-6)
^{136}Cs	<4(-8)	<4(-7)	a	<2(-6)
^{137}Cs	<3(-8)	<2(-7)	a	<3(-6)
^{138}Cs	*	*	*	<2(-5)
^{139}Cs	*	*	*	<3(-3)
^{24}Na	1.07 ± 0.03(-5)	*	a, *	3.43 ± 0.03(-3)
^{51}Cr	4.5 ± 0.1 (-6)	7.32 ± 0.06(-4)	7.37 ± 0.06(-4)[b]	6.9 ± 0.1 (-4)
^{54}Mn	3.19 ± 0.07(-6)	3.0 ± 0.3 (-6)	6.2 ± 0.3 (-6)[b]	1.1 ± 0.1 (-5)
^{56}Mn	<5(-5)	*	a, *	8.0 ± 0.1 (-5)
^{59}Fe	2.89 ± 0.08(-6)	7 ± 2 (-7)	3.5 ± 0.2 (-6)	<6(-6)

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1053

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<2(-8)	<4(-7)	a	<1(-6)
^{58}Co	7.0 ± 0.2 (-7)	2.4 ± 0.2 (-6)	3.1 ± 0.2 (-6)	6.7 ± 0.6 (-6)
^{60}Co	1.13 ± 0.04(-6)	1.4 ± 0.2 (-6)	2.5 ± 0.2 (-6)	6.0 ± 0.7 (-6)
^{65}Zn	<7(-8)	<4(-7)	a	<6(-6)
^{91}Sr	<5(-7)	*	a, *	<6(-6)
^{91m}Y	*	*	*	<2(-5)
^{93}Y	<1(-6)	*	a, *	<3(-5)
^{95}Zr	<5(-8)	<4(-7)	a	<3(-6)
^{95}Nb	<5(-8)	<2(-7)	a	<2(-6)
^{99}Mo	<3(-7)	<2(-5)	a	1.2 ± 0.3 (-5)
^{103}Ru	<3(-8)	<4(-7)	a	<2(-6)
^{106}RuD	<3(-7)	<2(-6)	a	<2(-5)
^{110m}Ag	2.1 ± 0.1 (-7)	1.8 ± 0.1 (-6)	2.0 ± 0.1 (-6)	<2(-5)
^{124}Sb	<7(-8)	<4(-7)	a	<4(-6)
^{125}Sb	<6(-8)	<5(-7)	a	<5(-6)
^{129m}Te	<2(-7)	<4(-6)	a	<2(-5)
^{129}Te	*	*	*	<3(-5)
^{131m}Te	<2(-7)	<9(-5)	a	<8(-6)
^{131}Te	*	*	*	<5(-5)

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 6/7/82
Time: 1053

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{132}Te	<2(-8)	<1(-6)	a	<1(-6)
^{139}Ba	*	*	*	5 ± 2 (-6)
^{140}Ba	<2(-7)	<2(-6)	a	<7(-6)
^{140}La	<3(-8)	<5(-6)	a	<2(-6)
^{141}Ce	<5(-8)	<5(-7)	a	<2(-6)
^{143}Ce	<5(-8)	<3(-5)	a	<2(-6)
^{144}Ce	<2(-7)	<2(-6)	a	<8(-6)
^{152}Eu	<7(-8)	<8(-7)	a	<3(-6)
^{154}Eu	<8(-8)	<6(-7)	a	<4(-6)
^{155}Eu	<5(-8)	<7(-7)	a	<5(-6)
^{187}W	4.4 ± 0.8 (-7)	<3(-4)	a	1.2 ± 0.2 (-5)
^{239}Np	<6(-8)	<8(-6)	a	<6(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab totals do not agree.

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 7/1/82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-4)
^{131}I	<1(-7)	9 ± 4 (-7)	a	7 ± 2 (-7)
^{132}I	*	*	*	<4(-5)
^{133}I	<8(-6)	<9(-5)	a	1.1 ± 0.4 (-5)
^{134}I	*	*	*	<1(-4)
^{135}I	*	*	*	<5(-5)
^{88}Rb	*	*	*	8 ± 4 (-4)
^{89}Rb	*	*	*	<5(-4)
^{134}Cs	<2(-7)	<8(-7)	a	<5(-7)
^{136}Cs	<2(-7)	<2(-6)	a	<6(-7)
^{137}Cs	<2(-7)	<8(-7)	a	<3(-7)
^{138}Cs	*	*	*	<6(-5)
^{139}Cs	*	*	*	<2(-2)
^{24}Na	1.1 ± 0.1 (-4)	9.6 ± 0.3 (-3)	9.7 ± 0.3 (-3)	9.7 ± 0.7 (-3)
^{51}Cr	3.10 ± 0.07(-5)	9.5 ± 0.1 (-4)	9.8 ± 0.1 (-4)[b]	8.54 ± 0.08(-4)
^{54}Mn	1.46 ± 0.03(-5)	7.3 ± 0.6 (-6)	2.19 ± 0.07(-5)	1.95 ± 0.06(-5)
^{56}Mn	*	*	*	<6(-5)

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 7/1/82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{59}Fe	1.25 ± 0.03(-5)	2.4 ± 0.5 (-6)	1.49 ± 0.06(-5)[b]	1.20 ± 0.04(-5)
^{57}Co	<7(-8)	<8(-7)	a	<3(-7)
^{58}Co	3.8 ± 0.2 (-6)	2.6 ± 0.4 (-6)	6.4 ± 0.4 (-6)	5.7 ± 0.3 (-6)
^{60}Co	8.7 ± 0.2 (-6)	3.0 ± 0.7 (-6)	1.18 ± 0.07(-5)	1.23 ± 0.04(-5)
^{65}Zn	2 ± 1 (-7)	1.9 ± 0.7 (-6)	2.1 ± 0.7 (-6)	9 ± 3 (-7)
^{91}Sr	*	*	*	<8(-5)
^{91m}Y	*	*	*	<3(-5)
^{93}Y	*	*	*	<8(-5)
^{95}Zr	<2(-7)	<1(-6)	a	<6(-7)
^{95}Nb	<4(-7)	<6(-7)	a	<5(-7)
^{99}Mo	<3(-6)	<3(-5)	a	<2(-5)
^{103}Ru	<9(-8)	<6(-7)	a	<3(-7)
^{106}RuD	<2(-6)	<6(-6)	a	<3(-6)
^{110m}Ag	6.6 ± 0.4 (-7)	1.7 ± 0.2 (-6)	2.4 ± 0.3 (-6)	4.3 ± 0.8 (-6)
^{124}Sb	1.9 ± 0.7 (-7)	<2(-6)	a	<7(-7)
^{125}Sb	<2(-7)	<3(-6)	a	<7(-7)
^{129m}Te	<1(-6)	<7(-6)	a	<5(-6)
^{129}Te	*	*	*	<3(-4)
^{131m}Te	<8(-6)	<6(-5)	a	<3(-5)

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 7/1/82
Time: 0935

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}Te	*	*	*	<3(-4)
^{132}Te	<2(-7)	<3(-6)	a	<7(-7)
^{139}Ba	*	*	*	<4(-5)
^{140}Ba	<4(-7)	<5(-6)	a	<2(-6)
^{140}La	<9(-7)	<7(-6)	a	<5(-6)
^{141}Ce	<2(-7)	<1(-6)	a	<5(-7)
^{143}Ce	<2(-6)	<2(-5)	a	<7(-6)
^{144}Ce	<7(-7)	<4(-6)	a	<2(-6)
^{152}Eu	<3(-7)	<2(-6)	a	<1(-6)
^{154}Eu	<3(-7)	<2(-6)	a	<6(-7)
^{155}Eu	<3(-7)	<2(-6)	a	<8(-7)
^{187}W	<2(-5)	<7(-5)	a	<3(-5)
^{239}Np	<2(-6)	<2(-5)	a	<5(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab totals do not agree.

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0950

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<4(-8)	<5(-7)	a	<3(-7)
^{132}I	*	*	*	*
^{133}I	<2(-7)	<3(-6)	a	<8(-7)
^{134}I	*	*	*	*
^{135}I	<2(-5)	<9(-5)	a	<8(-6)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<3(-8)	<5(-7)	a	<5(-7)
^{136}Cs	<7(-8)	<6(-7)	a	<7(-7)
^{137}Cs	<4(-8)	<4(-7)	a	<7(-7)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	<2(-7)	<9(-7)	a	<2(-7)
^{51}Cr	7 ± 1 (-7)	<4(-6)	a	<3(-6)
^{54}Mn	6.4 ± 0.1 (-6)	4.16 ± 0.07(-5)	4.80 ± 0.07(-5)	4.55 ± 0.06 (-5)
^{56}Mn	*	*	*	*

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0950

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{59}Fe	1.15 ± 0.04(-6)	<9(-7)	a	7 ± 2 (-7)
^{57}Co	<3(-8)	<3(-7)	a	<5(-7)
^{58}Co	5.5 ± 0.2 (-7)	1.71 ± 0.05(-5)	1.76 ± 0.05(-5)	1.65 ± 0.04 (-5)
^{60}Co	5.01 ± 0.09(-6)	5.30 ± 0.09(-5)	5.81 ± 0.09(-5)[b]	4.81 ± 0.08 (-5)
^{65}Zn	<1(-7)	<1(-6)	a	<7(-7)
^{91}Sr	<7(-6)	<5(-5)	a	<8(-6)
^{91m}Y	*	*	*	*
^{93}Y	<2(-5)	<8(-5)	a	<2(-5)
^{95}Zr	<6(-8)	<6(-7)	a	<7(-7)
^{95}Nb	<6(-8)	<4(-7)	a	<4(-7)
^{99}Mo	<5(-7)	<4(-6)	a	<3(-6)
^{103}Ru	<6(-8)	<5(-7)	a	<6(-7)
^{106}RuD	<3(-7)	<3(-6)	a	<3(-6)
^{110m}Ag	2.7 ± 0.2 (-7)	1.3 ± 0.1 (-6)	1.6 ± 0.1 (-6)	1.3 ± 0.1 (-6)
^{124}Sb	<5(-8)	<4(-7)	a	<5(-7)
^{125}Sb	<2(-7)	<2(-6)	a	<8(-7)
^{129m}Te	<5(-7)	<4(-6)	a	<3(-6)
^{129}Te	*	*	*	*
^{131m}Te	<6(-7)	<4(-6)	a	<3(-6)

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-28-82
Time: 0950

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{131}Te	*	*	*	*
^{132}Te	<4(-8)	<4(-7)	a	<3(-7)
^{139}Ba	*	*	*	*
^{140}Ba	<2(-7)	<2(-6)	a	<2(-6)
^{140}La	<4(-8)	<4(-7)	a	<5(-7)
^{141}Ce	<6(-8)	<4(-7)	a	<3(-7)
^{143}Ce	<2(-7)	<2(-6)	a	<7(-7)
^{144}Ce	<3(-7)	<2(-6)	a	<2(-6)
^{152}Eu	<7(-8)	<7(-7)	a	<4(-7)
^{154}Eu	<8(-7)	<6(-7)	a	<7(-7)
^{155}Eu	<9(-8)	<8(-7)	a	<4(-7)
^{187}W	<5(-7)	<6(-6)	a	<3(-6)
^{239}Np	<2(-7)	<3(-6)	a	<7(-7)

a. Sum not calculated due to large less-than values.

b. Sum and grab values to not agree.

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-8-82
Time: 1556

Nuclide	Filter	Filtrate	Sum	Grab Sample[b]
^{84}Br	*	*	*	
^{131}I	<3(-8)	<2(-7)	a	
^{132}I	*	*	*	
^{133}I	<5(-7)	<8(-7)	a	
^{134}I	*	*	*	
^{135}I	<6(-5)	<2(-5)	a	
^{88}Rb	*	*	*	
^{89}Rb	*	*	*	
^{134}Cs	<3(-8)	<2(-7)	a	
^{136}Cs	<3(-8)	<3(-7)	a	
^{137}Cs	<8(-8)	<3(-7)	a	
^{138}Cs	*	*	*	
^{139}Cs	*	*	*	
^{24}Na	<4(-7)	<3(-7)	a	
^{51}Cr	<2(-7)	<2(-6)	a	
^{54}Mn	2.5 ± 0.2 (-7)	1.50 ± 0.03(-5)	1.53 ± 0.03(-5)	
^{56}Mn	*	*	*	

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-8-82
Time: 1556

Nuclide	Filter	Filtrate	Sum	Grab Sample[b]
^{59}Fe	<5(-8)	<3(-7)	a	
^{57}Co	<2(-8)	<2(-7)	a	
^{58}Co	6 ± 1 (-8)	4.4 ± 0.2 (-6)	4.5 ± 0.2 (-6)	
^{60}Co	3.0 ± 0.3 (-7)	1.89 ± 0.03(-5)	1.92 ± 0.03(-5)	
^{65}Zn	<5(-8)	<7(-7)	a	
^{91}Sr	<8(-6)	<9(-6)	a	
^{91m}Y	*	*	*	
^{93}Y	<2(-5)	<3(-5)	a	
^{95}Zr	<4(-8)	<4(-7)	a	
^{95}Nb	<3(-8)	<2(-7)	a	
^{99}Mo	<4(-7)	<4(-6)	a	
^{103}Ru	<2(-8)	<2(-7)	a	
^{106}RuD	<2(-7)	<2(-6)	a	
^{110m}Ag	9 ± 1 (-8)	4.1 ± 0.7 (-7)	5.0 ± 0.7 (-7)	
^{124}Sb	<4(-8)	<3(-7)	a	
^{125}Sb	<5(-8)	<8(-7)	a	
^{129m}Te	<4(-7)	<2(-6)	a	
^{129}Te	*	*	*	
^{131m}Te	<4(-7)	<2(-6)	a	
^{131}Te	*	*	*	

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-8-82
Time: 1556

Nuclide	Filter	Filtrate	Sum	Grab Sample[b]
^{132}Te	<3(-8)	<4(-7)	a	
^{139}Ba	*	*	*	
^{140}Ba	<2(-7)	<7(-7)	a	
^{140}La	<2(-7)	<1(-7)	a	
^{141}Ce	<3(-8)	<4(-7)	a	
^{143}Ce	<2(-7)	<6(-7)	a	
^{152}Eu	<7(-8)	<4(-7)	a	
^{154}Eu	<9(-8)	<5(-7)	a	
^{155}Eu	<5(-8)	<9(-7)	a	
^{187}W	<5(-5)	<4(-6)	a	
^{239}Np	<1(-7)	<1(-6)	a	

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. No grab sample.

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0117

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	<2(-5)
^{131}I	<4(-8)	<2(-7)	a	<3(-7)
^{132}I	<3(-6)	*	a, *	<6(-7)
^{133}I	<2(-7)	<3(-7)	a	<3(-7)
^{134}I	*	*	*	1.9 ± 0.2 (-5)
^{135}I	<5(-7)	<3(-6)	a	<7(-7)
^{88}Rb	*	*	*	<8(-5)
^{89}Rb	*	*	*	<1(-4)
^{134}Cs	<6(-8)	<2(-7)	a	<3(-7)
^{136}Cs	<7(-8)	<3(-7)	a	<4(-7)
^{137}Cs	<2(-7)	<2(-7)	a	<3(-7)
^{138}Cs	*	*	*	<5(-6)
^{139}Cs	*	*	*	*
^{24}Na	<4(-8)	<3(-7)	a	<2(-7)
^{51}Cr	1.7 ± 0.1 (-6)	5.8 ± 0.8 (-6)	7.5 ± 0.1 (-6)	6.2 ± 0.9 (-6
^{54}Mn	1.71 ± 0.03(-5)	2.24 ± 0.03(-5)	3.95 ± 0.04(-5)[b]	3.33 ± 0.05 (-5
^{56}Mn	<7(-6)	*	*, a	1.09 ± 0.04 (-5

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0117

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{59}Fe	3.93 ± 0.08(-6)	2.19 ± 0.08(-6)	6.1 ± 0.1 (-6)[b]	5.43 ± 0.03 (-6
^{57}Co	<2(-8)	<7(-8)	a	<2(-7)
^{58}Co	8.5 ± 0.4 (-7)	4.13 ± 0.08(-6)	4.98 ± 0.09(-6)	4.82 ± 0.02 (-6
^{60}Co	9.6 ± 0.2 (-6)	2.14 ± 0.02(-5)	3.10 ± 0.03(-5)[b]	2.84 ± 0.04 (-5
^{65}Zn	<3(-7)	<3(-7)	a	<6(-7)
^{91}Sr	<5(-7)	<2(-6)	a	<8(-7)
^{91m}Y	*	*	*	<2(-6)
^{93}Y	<9(-7)	<9(-6)	a	<5(-6)
^{95}Zr	<2(-7)	<2(-7)	a	<6(-7)
^{95}Nb	<2(-7)	<2(-7)	a	<3(-7)
^{99}Mo	<3(-7)	<1(-6)	a	<2(-6)
^{103}Ru	<6(-8)	<2(-7)	a	<4(-7)
^{106}RuD	<6(-7)	<2(-6)	a	<4(-6)
^{110m}Ag	1.2 ± 0.2 (-7)	1.72 ± 0.06(-6)	1.84 ± 0.06(-6)	<4(-6)
^{124}Sb	<1(-7)	<2(-7)	a	<3(-7)
^{125}Sb	<1(-7)	1.2 ± 0.1 (-6)	1.25 ± 0.05(-6)	9 ± 3 (-7)
^{129m}Te	<7(-7)	<2(-6)	a	<4(-6)
^{129}Te	*	*	*	<2(-5)
^{131m}Te	<3(-7)	<8(-7)	a	<2(-6)
^{131}Te	*	*	*	<4(-5)

Table B.3-97 (cont'd)
UNIT NO. 1 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM
FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-10-82
Time: 0117

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{132}Te	<3(-8)	<2(-7)	a	<3(-7)
^{139}Ba	<1(-4)	*	a, *	<2(-6)
^{140}Ba	<3(-7)	<6(-7)	a	<8(-7)
^{140}La	<3(-8)	<5(-8)	a	<2(-7)
^{141}Ce	<7(-8)	<2(-7)	a	<3(-7)
^{143}Ce	<1(-7)	<3(-7)	a	<5(-7)
^{144}Ce	<2(-7)	<8(-7)	a	<2(-6)
^{152}Eu	<9(-8)	<2(-7)	a	<7(-7)
^{154}Eu	<8(-8)	<2(-7)	a	<7(-7)
^{155}Eu	<7(-8)	<3(-7)	a	<8(-7)
^{187}W	<3(-7)	<7(-7)	a	<9(-7)
^{239}Np	<7(-8)	<5(-7)	a	<5(-7)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-98
PERCENT FILTERED FRACTION IN UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM INLET

	Date and Time
	6-7-82 1047
^{131}I	1.9
^{133}I	0
^{135}I	0
^{24}Na	0.6 [b]
^{51}Cr	3.1
^{54}Mn	46.5
^{59}Fe	75.6
^{58}Co	16.6
^{60}Co	2.7
^{110m}Ag	22.1

b. Sum and grab values do not agree.

Table B.3-99
PERCENT FILTERED FRACTION IN UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM OUTLET

	Date and Time	
	6-7-82 1053	7-1-82 0935
^{131}I	0	a
^{133}I	a	a
^{135}I	a	*
^{24}Na	a	1.1
^{51}Cr	0.6 [b]	3.2 [b]
^{54}Mn	51.4 [b]	66.7
^{59}Fe	82.6	83.9 [b]
^{58}Co	22.6	59.4
^{60}Co	45.2	73.7
^{110m}Ag	10.5	27.5

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-99 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 1 REACTOR WATER CLEANUP SYSTEM OUTLET

	Date and Time	
	9-28-82 0950	10-10-82 0117
^{24}Na	*	*
^{51}Cr	*	23
^{54}Mn	13	43 [b]
^{56}Mn	*	*
^{59}Fe	*	64
^{57}Co	*	*
^{58}Co	3.1	17
^{60}Co	8.6 [b]	31 [b]
^{65}Zn	*	*
^{95}Nb	*	*
^{110m}Ag	17	6.5
^{124}Sb	*	*
^{125}Sb	*	<8
^{131m}Te	*	*
^{132}Te	*	*

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-100a
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-23-82 1644	4-23-82 1843	4-23-82 2233	4-24-82 0125	4-24-82 0430	4-24-82 0850
^{84}Br	1.8 ± 0.1 (-3)	2.0 ± 0.1 (-3)	1.7 ± 0.2 (-3)	3.2 ± 0.3 (-3)	<2(-4)	<9(-5)
^{131}I	5.7 ± 0.2 (-4)	5.98 ± 0.07(-4)	7.19 ± 0.07(-4)	2.15 ± 0.01(-2)	1.05 ± 0.01(-2)	1.55 ± 0.01(-2)
^{132}I	7.41 ± 0.07(-3)	8.51 ± 0.09(-3)	9.3 ± 0.2 (-3)	5.54 ± 0.04(-2)	1.72 ± 0.01(-2)	1.68 ± 0.01(-2)
^{133}I	6.1 ± 0.2 (-3)	6.3 ± 0.2 (-3)	7.6 ± 0.3 (-3)	4.04 ± 0.07(-2)	1.54 ± 0.03(-2)	1.66 ± 0.05(-2)
^{134}I	1.73 ± 0.01(-2)	1.91 ± 0.02(-2)	2.14 ± 0.02(-2)	5.05 ± 0.03(-2)	2.18 ± 0.05(-3)	1.1 ± 0.2 (-4)
^{135}I	1.08 ± 0.01(-2)	1.26 ± 0.01(-2)	1.27 ± 0.02(-2)	4.60 ± 0.05(-2)	1.24 ± 0.01(-2)	8.83 ± 0.08(-3)
^{88}Rb	*	<8(-4)	*	1.1 ± 0.1 (-2)	8 ± 3 (-4)	*
^{89}Rb	<2(-3)	6.1 ± 0.9 (-4)	<2(-3)	<3(-3)	<5(-4)	<3(-4)
^{134}Cs	1.18 ± 0.03(-5)	1.25 ± 0.04(-5)	1.28 ± 0.04(-5)	1.45 ± 0.01(-3)	6.58 ± 0.05(-4)	1.02 ± 0.01(-3)
^{136}Cs	1.80 ± 0.06(-5)	1.73 ± 0.06(-5)	1.98 ± 0.09(-5)	5.31 ± 0.08(-4)	2.17 ± 0.05(-4)	2.69 ± 0.09(-4)
^{137}Cs	1.76 ± 0.07(-5)	1.77 ± 0.08(-5)	1.83 ± 0.06(-5)	1.70 ± 0.03(-3)	8.1 ± 0.1 (-4)	1.24 ± 0.01(-3)
^{138}Cs	2.21 ± 0.06(-3)	2.71 ± 0.08(-3)	2.5 ± 0.2 (-3)	6.1 ± 0.3 (-3)	<2(-4)	<2(-4)
^{139}Cs	<9(-3)	<3(-3)	<2(-2)	<2(-2)	<5(-3)	<3(-3)
^{24}Na	6.1 ± 0.1 (-3)	7.37 ± 0.09(-3)	7.8 ± 0.2 (-3)	2.31 ± 0.04(-2)	7.3 ± 0.1 (-3)	5.69 ± 0.06(-3)
^{51}Cr	4.16 ± 0.02(-3)	4.24 ± 0.02(-3)	4.34 ± 0.02(-3)	2.51 ± 0.02(-2)	5.79 ± 0.05(-3)	2.99 ± 0.02(-3)
^{54}Mn	7.9 ± 0.4 (-6)	8.1 ± 0.4 (-6)	2.84 ± 0.08(-5)	1.25 ± 0.02(-3)	2.2 ± 0.1 (-5)	4.0 ± 0.1 (-5)
^{56}Mn	1.4 ± 0.4 (-4)	<2(-4)	8 ± 1 (-4)	9.6 ± 0.2 (-3)	2.1 ± 0.4 (-4)	2.3 ± 0.3 (-4)
^{59}Fe	<3(-6)	<2(-6)	2.5 ± 0.1 (-5)	1.26 ± 0.01(-3)	<8(-6)	6 ± 3 (-6)

Table B.3-100a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	4-23-82 1644	4-23-82 1843	4-23-82 2233	4-24-82 0125	4-24-82 0430	4-24-82 0850
^{57}Co	*	<5(-6)	*	<9(-6)	*	*
^{58}Co	1.8 ± 0.1 (-5)	1.7 ± 0.1 (-5)	2.5 ± 0.2 (-5)	4.9 ± 0.3 (-4)	<2(-4)	<9(-5)
^{60}Co	2.49 ± 0.06(-5)	2.53 ± 0.06(-5)	4.02 ± 0.07(-5)	1.16 ± 0.02(-3)	5.3 ± 0.2 (-5)	6.8 ± 0.2 (-5)
^{65}Zn	1.02 ± 0.08(-5)	8.5 ± 0.7 (-6)	9.2 ± 0.9 (-6)	9.3 ± 0.8 (-5)	2.0 ± 0.3 (-5)	1.6 ± 0.3 (-5)
^{91}Sr	7.9 ± 0.4 (-4)	7.3 ± 0.5 (-4)	1.0 ± 0.1 (-3)	1.80 ± 0.03(-2)	3.74 ± 0.09(-3)	2.49 ± 0.04(-3)
^{91m}Y	<2(-4)	8 ± 3 (-5)	1.8 ± 0.9 (-4)	9 ± 1 (-4)	2.9 ± 0.5 (-4)	2.1 ± 0.4 (-4)
^{93}Y	<7(-4)	<9(-4)	<2(-3)	<2(-3)	<6(-4)	4 ± 2 (-4)
^{95}Zr	<1(-6)	<2(-6)	1.5 ± 0.6 (-6)	5.7 ± 0.3 (-5)	<4(-6)	<4(-6)
^{95}Nb	<1(-6)	<6(-7)	<1(-6)	6.3 ± 0.5 (-5)	<2(-6)	<3(-6)
^{99}Mo	9.7 ± 0.2 (-4)	9.1 ± 0.3 (-4)	1.00 ± 0.03(-3)	5.9 ± 0.1 (-3)	1.99 ± 0.05(-3)	1.46 ± 0.05(-3)
^{103}Ru	9 ± 4 (-7)	<9(-7)	2.3 ± 0.3 (-6)	1.42 ± 0.03(-4)	<4(-6)	<4(-6)
^{106}RuD	<5(-6)	<7(-6)	<6(-6)	<4(-5)	<4(-5)	<2(-5)
^{110m}Ag	5 ± 2 (-7)	8 ± 2 (-7)	1.4 ± 0.3 (-6)	3 ± 1 (-6)	3.3 ± 0.8 (-6)	4.2 ± 0.7 (-6)
^{124}Sb	<2(-6)	<7(-7)	<9(-7)	7 ± 3 (-6)	<4(-6)	<3(-6)
^{125}Sb	*	<2(-6)	*	<2(-5)	*	*
^{129m}Te	*	<9(-6)	*	<5(-5)	*	*
^{129}Te	8 ± 1 (-4)	*	<4(-3)	4.2 ± 0.6 (-3)	<6(-4)	<4(-4)
^{131m}Te	*	<3(-4)	*	<1(-3)	*	*
^{131}Te	*	4 ± 2 (-4)	*	<5(-3)	*	*

Table B.3-100a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-23-82 1644	4-23-82 1843	4-23-82 2233	4-24-82 0125	4-24-82 0430	4-24-82 0850
^{132}Te	<8(-6)	<9(-6)	<6(-6)	<3(-5)	<4(-5)	<3(-5)
^{139}Ba	2.20 ± 0.07(-3)	2.50 ± 0.05(-3)	2.3 ± 0.2 (-3)	1.57 ± 0.02(-2)	7 ± 1 (-4)	<1(-4)
^{140}Ba	1.72 ± 0.03(-4)	1.72 ± 0.03(-4)	2.2 ± 0.2 (-4)	1.06 ± 0.05(-2)	4.3 ± 0.4 (-3)	4.20 ± 0.08(-3)
^{140}La	3 ± 1 (-5)	1.2 ± 0.1 (-4)	<9(-5)	**	**	**
^{141}Ce	1.8 ± 0.6 (-6)	2.0 ± 0.6 (-6)	2.0 ± 0.6 (-6)	4.5 ± 0.8 (-5)	<8(-6)	<2(-5)
^{143}Ce	<5(-5)	<5(-5)	<8(-5)	<2(-4)	<8(-5)	<7(-5)
^{144}Ce	<4(-6)	<5(-6)	<5(-6)	<2(-4)	<3(-5)	<4(-5)
^{152}Eu	<3(-6)	<2(-6)	<4(-6)	<2(-5)	<8(-6)	<8(-6)
^{154}Eu	*	<4(-6)	*	<2(-5)	*	*
^{155}Eu	*	<5(-6)	*	<5(-5)	*	*
^{187}W	<2(-4)	<2(-4)	<4(-4)	4 ± 2 (-4)	<2(-4)	<2(-4)
^{239}Np	2.4 ± 0.1 (-3)	2.26 ± 0.03(-3)	2.81 ± 0.02(-3)	1.32 ± 0.01(-2)	8.0 ± 0.1 (-3)	1.29 ± 0.01(-2)

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

Table B.3-100a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time 4-24-82 1143	4-24-82 1527	4-29-82 1500	10-19-82 1223	10-20-82 1431	10-24-82 1341
^{84}Br	<2(-4)	*	<2(-5)	<3(-5)	<2(-4)	<3(-3)
^{131}I	7.59 ± 0.04(-3)	1.01 ± 0.01(-2)	3.19 ± 0.04(-4)	1.03 ± 0.01(-4)	1.06 ± 0.05(-4)	1.8 ± 0.1 (-3)
^{132}I	5.90 ± 0.05(-3)	*	7.56 ± 0.05(-4)	5.6 ± 0.3 (-5)	9.7 ± 0.1 (-4)	8.5 ± 0.1 (-3)
^{133}I	6.9 ± 0.1 (-3)	7.61 ± 0.08(-3)	9 ± 2 (-6)	8.3 ± 0.2 (-4)	1.46 ± 0.02(-3)	2.03 ± 0.04(-2)
^{134}I	6 ± 2 (-5)	*	1.44 ± 0.05(-4)	8.7 ± 0.6 (-5)	2.28 ± 0.02(-3)	2.13 ± 0.08(-3)
^{135}I	2.58 ± 0.03(-3)	*	<5(-6)	8.4 ± 0.2 (-4)	3.02 ± 0.02(-3)	2.51 ± 0.01(-2)
^{88}Rb	*	*	<3(-5)	<2(-4)	<3(-4)	*
^{89}Rb	<5(-4)	*	<4(-5)	<7(-5)	<2(-4)	*
^{134}Cs	6.67 ± 0.05(-4)	8.97 ± 0.05(-4)	3.10 ± 0.02(-4)	<9(-7)	<3(-6)	<4(-5)
^{136}Cs	1.86 ± 0.03(-4)	2.59 ± 0.03(-4)	6.17 ± 0.09(-5)	<2(-6)	5 ± 1 (-6)	<2(-4)
^{137}Cs	8.1 ± 0.2 (-4)	1.06 ± 0.01(-3)	3.46 ± 0.02(-4)	1.7 ± 0.5 (-6)	<4(-6)	<3(-4)
^{138}Cs	<2(-4)	*	<6(-6)	1.17 ± 0.08(-4)	1.5 ± 0.1 (-4)	<4(-4)
^{139}Cs	<2(-2)	*	<2(-3)	<7(-4)	<4(-3)	<2(-1)
^{24}Na	1.84 ± 0.04(-3)	1.97 ± 0.08(-3)	<6(-7)	4.2 ± 0.4 (-5)	1.46 ± 0.02(-3)	4.05 ± 0.04(-2)
^{51}Cr	5.6 ± 0.1 (-4)	2.1 ± 0.2 (-4)	2.74 ± 0.05(-4)	3.1 ± 0.2 (-5)	4.0 ± 0.2 (-4)	5.6 ± 0.1 (-3)
^{54}Mn	5.5 ± 0.1 (-5)	9.2 ± 0.3 (-5)	2.77 ± 0.04(-4)	7.8 ± 0.1 (-5)	7 ± 1 (-4)	2.0 ± 0.2 (-4)
^{56}Mn	7.2 ± 0.5 (-5)	*	<6(-6)	<9(-6)	1.12 ± 0.08(-4)	1.03 ± 0.09(-3)

Table B.3-100a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	4-24-82 1143	4-24-82 1527	4-29-82 1500	10-19-82 1223	10-20-82 1431	10-24-82 1341
^{59}Fe	2.3 ± 0.2 (-5)	<7(-6)	1.05 ± 0.09(-5)	4.6 ± 0.6 (-6)	1.09 ± 0.01(-4)	<2(-4)
^{57}Co	*	*	<8(-7)	<4(-7)	6 ± 2 (-7)	<7(-5)
^{58}Co	3.3 ± 0.2 (-5)	8.2 ± 0.2 (-5)	1.55 ± 0.02(-4)	1.05 ± 0.05(-5)	8 ± 1 (-5)	<2(-4)
^{60}Co	7.8 ± 0.3 (-5)	1.32 ± 0.03(-4)	5.45 ± 0.06(-4)	1.94 ± 0.03(-4)	8.5 ± 0.1 (-4)	3.5 ± 0.1 (-4)
^{65}Zn	2.1 ± 0.3 (-5)	1.6 ± 0.2 (-5)	5.8 ± 0.1 (-5)	9 ± 1 (-6)	3.6 ± 0.6 (-5)	<2(-4)
^{91}Sr	9.1 ± 0.2 (-4)	<3(-3)	<8(-6)	<2(-5)	4.9 ± 0.1 (-4)	1.17 ± 0.01(-2)
^{91m}Y	1.8 ± 0.2 (-4)	*	<9(-6)	<6(-6)	9.1 ± 0.9 (-5)	2.1 ± 0.5 (-3)
^{93}Y	<2(-4)	1.9 ± 0.4 (-2)	<2(-5)	<6(-5)	<2(-4)	<6(-4)
^{95}Zr	<4(-6)	<4(-6)	<3(-6)	<2(-6)	4.6 ± 0.8 (-6)	<2(-4)
^{95}Nb	<3(-6)	<3(-6)	<2(-6)	<2(-6)	9 ± 1 (-6)	<7(-5)
^{99}Mo	6.3 ± 0.4 (-4)	6.1 ± 0.3 (-4)	1.9 ± 0.5 (-5)	4 ± 2 (-5)	2.1 ± 0.2 (-4)	8.7 ± 0.2 (-3)
^{103}Ru	<5(-6)	<4(-6)	2.19 ± 1.07(-6)	1.0 ± 0.4 (-6)	<1(-5)	<4(-5)
^{106}RuD	<2(-5)	*	<2(-5)	<9(-6)	<2(-5)	<2(-3)
^{110m}Ag	5.8 ± 0.6 (-7)	2.7 ± 0.9 (-5)	3.19 ± 0.08(-5)	1.7 ± 0.3 (-6)	<3(-6)	<9(-5)
^{124}Sb	<3(-6)	<3(-6)	<2(-6)	<2(-6)	<3(-6)	<6(-5)
^{125}Sb	*	*	<4(-6)	<2(-6)	<5(-6)	<3(-4)
^{129m}Te	*	*	<2(-5)	<2(-5)	<3(-5)	<5(-4)
^{129}Te	<3(-4)	*	<6(-5)	<8(-5)	3.0 ± 0.5 (-4)	<2(-3)
^{131m}Te	*	*	<1(-5)	<2(-5)	<5(-5)	<2(-4)

Table B.3-100a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	4-24-82 1143	4-24-82 1527	4-29-82 1500	10-19-82 1223	10-20-82 1431	10-24-82 1341
^{131}Te	*	*	<5(-5)	<9(-5)	<2(-4)	<3(-3)
^{132}Te	<3(-5)	<3(-5)	<2(-6)	<4(-6)	<6(-6)	<2(-4)
^{139}Ba	<7(-5)	*	<9(-6)	<5(-5)	5.9 ± 0.1 (-4)	2.4 ± 0.2 (-3)
^{140}Ba	2.4 ± 0.1 (-3)	2.5 ± 0.1 (-3)	2.3 ± 0.3 (-5)	4.8 ± 0.2 (-5)	4 ± 1 (-5)	3.2 ± 0.2 (-3)
^{140}La	**	**	3.9 ± 0.7 (-6)	1.9 ± 0.2 (-5)	7 ± 2 (-6)	1.1 ± 0.2 (-4)
^{141}Ce	<4(-6)	<9(-6)	1.6 ± 0.8 (-6)	9 ± 4 (-7)	6.4 ± 0.4 (-6)	<4(-5)
^{143}Ce	<4(-5)	<4(-5)	<3(-6)	<8(-6)	<2(-5)	<5(-5)
^{144}Ce	<3(-5)	*	<7(-6)	<4(-6)	1.0 ± 0.2 (-5)	<3(-4)
^{152}Eu	<7(-6)	*	<4(-6)	<2(-6)	<2(-6)	<2(-4)
^{154}Eu	*	*	<3(-6)	<2(-6)	<2(-6)	<2(-4)
^{155}Eu	*	*	<3(-6)	<2(-6)	<2(-6)	<7(-4)
^{187}W	<4(-5)	<1(-4)	<2(-5)	<2(-5)	3.4 ± 0.7 (-5)	<1(-4)
^{239}Np	6.49 ± 0.06(-3)	1.06 ± 0.04(-2)	1.38 ± 0.03(-4)	5.4 ± 0.5 (-5)	3.9 ± 0.2 (-4)	1.05 ± 0.01(-2)

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

Table B.3-100b
UNIT NO. 2 LESS FREQUENTLY OBSERVED RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Nuclide	Date and Time				
	4-23-82 1644	4-23-82 1843	4-23-82 2227	4-24-82 0125	4-24-82 0430
Cl-38	2.8 ± 0.7 (-4)	4.3 ± 0.5 (-4)	<4(-4)	6 ± 2 (-4)	<2(-4)
Ni-65	<2(-4)	<2(-4)	<3(-4)	<8(-4)	<1(-4)
Sr-92	1.69 ± 0.04(-3)	1.87 ± 0.05(-3)	2.0 ± 0.1 (-3)	2.15 ± 0.03(-2)	2.15 ± 0.03(-3)
Y-92	3.1 ± 0.9 (-4)	4 ± 1 (-4)	6 ± 3 (-4)	3.7 ± 0.5 (-3)	3 ± 1 (-4)
Nb-95m	6.8 ± 0.4 (-4)	9.2 ± 0.4 (-4)	1.0 ± 0.1 (-3)	1.9 ± 0.3 (-3)	<1(-4)
Tc-99m	9.4 ± 0.2 (-3)	1.08 ± 0.02(-2)	1.04 ± 0.02(-2)	5.26 ± 0.07(-2)	1.35 ± 0.01(-2)
Tc-101	8.4 ± 0.2 (-3)	1.01 ± 0.05(-2)	9.1 ± 0.4 (-3)	3 ± 2 (-2)	<4(-4)
Tc-104	7.14 ± 0.09(-3)	8.20 ± 0.07(-3)	6.8 ± 0.4 (-3)	9.6 ± 0.4 (-3)	<5(-4)
Ba-141	1.8 ± 0.8 (-3)	2.3 ± 0.3 (-3)	2.0 ± 0.3 (-3)	8.6 + 0.8 (-3)	<2(-4)
Ba-142	2.2 ± 0.5 (-3)	1.6 ± 0.5 (-3)	<2(-2)	<9(-3)	2.5 ± 0.9 (-3)
La-142	<5(-4)	4 ± 2 (-4)	<5(-4)	<2(-3)	<6(-5)

Table B.3-101
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR
WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time					
	9-29-82 2010	9-30-82 0830	10-2-82 1040	10-2-82 1240	10-2-82 2030	10-4-82 0930
^{84}Br	*	<6(-6)	*	*	*	1.6 ± 0.1 (-4)
^{131}I	<7(-7)	1.0 ± 0.5 (-6)	3.4 ± 0.3 (-6)	2.4 ± 0.2 (-6)	5.4 ± 0.3 (-6)	2.59 ± 0.06(-5)
^{132}I	<6(-5)	<3(-6)	*	*	*	1.45 ± 0.04(-4)
^{133}I	<1(-6)	1.0 ± 0.1 (-5)	3.4 ± 0.3 (-5)	4.1 ± 0.3 (-5)	8.6 ± 0.2 (-5)	4.05 ± 0.06(-4)
^{134}I	*	1.7 ± 0.2 (-5)	*	*	*	9.2 ± 0.1 (-4)
^{135}I	<6(-6)	1.9 ± 0.2 (-5)	<2(-3)	<2(-3)	<6(-4)	8.0 ± 0.1 (-4)
^{88}Rb	*	<3(-5)	*	*	*	<4(-5)
^{89}Rb	*	<2(-5)	*	*	*	7 ± 1 (-5)
^{134}Cs	9.5 ± 3.8 (-7)	<2(-6)	1.2 ± 0.2 (-6)	<5(-7)	<4(-7)	<7(-7)
^{136}Cs	<7(-7)	<9(-7)	<2(-6)	<2(-6)	<7(-7)	<9(-7)
^{137}Cs	<9(-7)	<2(-6)	<8(-7)	<8(-7)	<6(-7)	<4(-7)
^{138}Cs	*	<1(-5)	*	*	*	1.4 ± 0.1 (-4)
^{139}Cs	*	<7(-5)	*	*	*	2 ± 1 (-4)
^{24}Na	<8(-7)	<9(-7)	<4(-6)	<8(-6)	1.5 ± 0.2 (-5)	4.6 ± 0.2 (-5)
^{51}Cr	<6(-6)	<2(-5)	<5(-6)	<4(-6)	<6(-6)	9 ± 1 (-6)
^{54}Mn	1.2 ± 0.5 (-6)	4 ± 1 (-6)	2.26 ± 0.08(-5)	1.86 ± 0.06(-5)	8.5 ± 0.7 (-6)	3.8 ± 0.2 (-6)
^{56}Mn	<6(-5)	<8(-6)	*	*	*	<3(-5)

Table B.3-101 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR
WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040	10-2-82 1240	10-2-82 2030	10-4-82 0930
^{59}Fe	<2(-6)	<2(-6)	<2(-6)	<2(-6)	<8(-7)	<5(-7)
^{57}Co	<4(-7)	<2(-6)	<4(-7)	<4(-7)	<6(-7)	<3(-7)
^{58}Co	<6(-7)	<2(-6)	1.34 ± 0.05(-5)	1.03 ± 0.05(-5)	4.4 ± 0.3 (-6)	2.2 ± 0.2 (-6)
^{60}Co	8.2 ± 0.8 (-6)	1.2 ± 0.1 (-5)	1.78 ± 0.03(-4)	1.40 ± 0.02(-4)	5.40 ± 0.09 (-5)	2.37 ± 0.06(-5)
^{65}Zn	<2(-6)	<3(-6)	3.4 ± 0.8 (-6)	<4(-6)	<3(-6)	1.8 ± 0.5 (-6)
^{91}Sr	<5(-6)	<5(-6)	<3(-4)	<2(-4)	<2(-4)	<5(-5)
^{91m}Y	*	<2(-6)	*	*	*	<2(-5)
^{93}Y	<2(-5)	<2(-5)	<4(-4)	<3(-4)	<2(-4)	<2(-4)
^{95}Zr	<2(-6)	<2(-6)	<1(-6)	<2(-6)	<9(-7)	<8(-7)
^{95}Nb	<5(-7)	<2(-6)	<6(-7)	<5(-7)	<5(-7)	<5(-7)
^{99}Mo	<7(-6)	<7(-6)	<8(-6)	<7(-6)	<9(-6)	9 ± 3 (-6)
^{103}Ru	<8(-7)	<1(-6)	<8(-7)	<4(-7)	<5(-7)	<5(-7)
^{106}RuD	<6(-6)	<9(-6)	<5(-6)	<5(-6)	<4(-6)	<4(-6)
^{110m}Ag	<6(-7)	<8(-7)	6 ± 3 (-7)	1.3 ± 0.3 (-6)	<9(-7)	<2(-6)
^{124}Sb	<5(-7)	<2(-6)	<5(-7)	<9(-7)	<7(-7)	<7(-7)
^{125}Sb	<2(-6)	<3(-6)	<2(-6)	<1(-6)	<9(-7)	<1(-6)
^{129m}Te	<6(-6)	<2(-5)	<8(-6)	<9(-6)	<5(-6)	<7(-6)
^{129}Te	*	<3(-5)	*	*	*	<5(-4)
^{131m}Te	<4(-6)	<4(-6)	<2(-5)	<2(-5)	<9(-6)	<2(-5)

Table B.3-101 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR
WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040	10-2-82 1240	10-2-82 2030	10-4-82 0930
^{131}Te	*	<2(-5)	*	*	*	<7(-5)
^{132}Te	<6(-7)	<2(-6)	<2(-6)	<6(-7)	<6(-7)	<1(-6)
^{139}Ba	*	<5(-6)	*	*	*	4 ± 2 (-5)
^{140}Ba	<2(-6)	<4(-6)	<3(-6)	<3(-6)	<2(-6)	3 ± 1 (-6)
^{140}La	<5(-7)	<2(-6)	<2(-6)	<2(-6)	<2(-6)	2.1 ± 0.6 (-6)
^{141}Ce	<9(-7)	<2(-6)	<5(-7)	<5(-7)	<8(-7)	<9(-7)
^{143}Ce	<2(-6)	<2(-6)	<6(-6)	<3(-6)	<4(-6)	<3(-6)
^{144}Ce	<5(-6)	<7(-6)	<3(-6)	<2(-6)	<3(-6)	<3(-6)
^{152}Eu	<2(-6)	<4(-6)	<2(-6)	<2(-6)	<7(-7)	<2(-6)
^{154}Eu	<3(-6)	<2(-6)	<2(-6)	<2(-6)	<1(-6)	<7(-7)
^{155}Eu	<3(-6)	<4(-6)	<3(-6)	<2(-6)	<2(-6)	<2(-6)
^{187}W	<4(-6)	<6(-6)	<2(-5)	<1(-5)	<7(-6)	<9(-6)
^{239}Np	<2(-6)	<4(-6)	2.5 ± 0.2 (-5)	2.62 ± 0.09(-5)	3.9 ± 0.1 (-5)	1.04 ± 0.02(-4)

* Radionuclide not measured.

Table B.3-101 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR
WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 10-20-82 1429
^{84}Br	2.4 ± 0.5 (-4)
^{131}I	1.3 ± 0.1 (-4)
^{132}I	1.25 ± 0.02(-3)
^{133}I	1.7 ± 0.1 (-3)
^{134}I	2.78 ± 0.03(-3)
^{135}I	3.61 ± 0.03(-3)
^{88}Rb	<3(-4)
^{89}Rb	<2(-4)
^{134}Cs	<2(-6)
^{136}Cs	5.7 ± 0.4 (-6)
^{137}Cs	1.4 ± 0.2 (-6)
^{138}Cs	1.8 ± 0.2 (-4)
^{139}Cs	<4(-3)
^{24}Na	1.65 ± 0.03(-3)
^{51}Cr	1.07 ± 0.04(-3)
^{54}Mn	1.59 ± 0.09(-3)
^{56}Mn	2.1 ± 0.2 (-4)

Table B.3-101 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR
WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

Nuclide	Date and Time 10-20-82 1429
^{59}Fe	1.96 ± 0.03(-4)
^{57}Co	<3(-6)
^{58}Co	1.6 ± 0.1 (-4)
^{60}Co	2.11 ± 0.03(-3)
^{65}Zn	8 ± 1 (-5)
^{91}Sr	6.5 ± 0.3 (-4)
^{91m}Y	1.5 ± 0.2 (-4)
^{93}Y	<9(-5)
^{95}Zr	8.3 ± 0.6 (-6)
^{95}Nb	1.33 ± 0.04(-5)
^{99}Mo	6.6 ± 0.5 (-4)
^{103}Ru	1.85 ± 0.04(-5)
^{106}RuD	<2(-5)
^{110m}Ag	8 ± 2 (-7)
^{124}Sb	3.4 ± 0.2 (-6)
^{125}Sb	3.5 ± 0.7 (-6)
^{129m}Te	<9(-6)
^{129}Te	<3(-4)
^{131m}Te	<2(-5)

Table B.3-101 (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR
WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET
(microcuries/gram)

	Date and Time
Nuclide	10-20-82 1429
^{131}Te	<3(-4)
^{132}Te	<2(-6)
^{139}Ba	8.2 ± 0.2 (-4)
^{140}Ba	5.1 ± 0.1 (-5)
^{140}La	<2(-6)
^{141}Ce	1.09 ± 0.09(-5)
^{143}Ce	2.3 ± 0.4 (-5)
^{144}Ce	2.6 ± 0.2 (-5)
^{152}Eu	<2(-6)
^{154}Eu	<1(-6)
^{155}Eu	<5(-6)
^{187}W	7 ± 2 (-5)
^{239}Np	4.24 ± 0.04(-4)

Table B.3-102
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-7-82 0930	4-22-82 0813	4-22-82 1156	4-22-82 1604	4-22-82 2015
^{131}I	3.25 ± 0.04(-3)	2.1 ± 0.3 (-3)	2.9 ± 0.4 (-3)	2.8 ± 0.3 (-3)	2.8 ± 0.3 (-3)
^{132}I	**	6.90 ± 0.08(-2)	6.74 ± 0.09(-2)	6.71 ± 0.09(-2)	7.2 ± 0.1 (-2)
^{133}I	**	3.77 ± 0.05(-2)	3.76 ± 0.05(-2)	3.60 ± 0.05(-2)	3.45 ± 0.05(-2)
^{134}I	**	2.00 ± 0.02(-1)	2.00 ± 0.02(-1)	1.93 ± 0.02(-1)	1.88 ± 0.03(-1)
^{135}I	**	7.4 ± 0.2 (-2)	7.2 ± 0.2 (-2)	7.2 ± 0.2 (-2)	7.5 ± 0.2 (-2)
^{134}Cs	5.5 ± 0.9 (-5)	**	**	**	**
^{137}Cs	7.3 ± 0.8 (-5)	**	**	**	**
^{51}Cr	4.67 ± 0.03(-2)	4.3 ± 0.3 (-2)	4.0 ± 0.3 (-2)	4.1 ± 0.3 (-2)	4.0 ± 0.3 (-2)
^{54}Mn	7.9 ± 0.8 (-5)	**	**	**	**
^{60}Co	2.2 ± 0.2 (-4)	6 ± 2 (-4)	**	**	**

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-23-82 0022	4-23-82 0410	4-23-82 0835	4-23-82 1228	4-23-82 1634	4-23-82 2030
^{131}I	3.1 ± 0.3 (-3)	3.6 ± 0.4 (-3)	3.1 ± 0.4 (-3)	2.6 ± 0.4 (-3)	3.0 ± 0.3 (-3)	3.6 ± 0.4 (-3)
^{132}I	6.46 ± 0.09(-2)	5.91 ± 0.07(-2)	6.49 ± 0.08(-2)	7.1 ± 0.1 (-2)	6.7 ± 0.1 (-2)	6.9 ± 0.1 (-2)
^{133}I	3.52 ± 0.05(-2)	4.03 ± 0.05(-2)	3.90 ± 0.05(-2)	3.3 ± 0.1 (-2)	3.52 ± 0.06(-2)	4.4 ± 0.1 (-2)
^{134}I	1.73 ± 0.02(-1)	1.35 ± 0.01(-1)	1.72 ± 0.01(-1)	1.91 ± 0.03(-1)	2.06 ± 0.04(-1)	2.07 ± 0.02(-1)
^{135}I	7.2 ± 0.2 (-2)	7.0 ± 0.2 (-2)	7.4 ± 0.2 (-2)	7.2 ± 0.2 (-2)	8.0 ± 0.2 (-2)	7.9 ± 0.3 (-2)
^{51}Cr	4.1 ± 0.3 (-2)	5.0 ± 0.3 (-2)	4.2 ± 0.3 (-2)	3.1 ± 0.3 (-2)	4.0 ± 0.3 (-2)	4.8 ± 0.3 (-2)
^{54}Mn	**	**	**	**	4.5 ± 0.4 (-3)	4.3 ± 0.5 (-3)
^{60}Co	**	**	**	**	9 ± 2 (-4)	6 ± 4 (-4)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-23-82 2200	4-24-82 0043	4-24-82 0253	4-24-82 0400	4-24-82 0520	4-24-82 0600
^{131}I	3.5 ± 0.4 (-3)	4.6 ± 0.4 (-3)	5.37 ± 0.07(-2)	4.99 ± 0.04(-2)	5.59 ± 0.04(-2)	5.71 ± 0.04(-2)
^{132}I	6.7 ± 0.1 (-2)	7.6 ± 0.1 (-2)	9.9 ± 0.1 (-2)	9.08 ± 0.07(-2)	8.69 ± 0.06(-2)	8.61 ± 0.08(-2)
^{133}I	3.86 ± 0.06(-2)	3.76 ± 0.06(-2)	7.06 ± 0.07(-2)	6.58 ± 0.04(-2)	6.53 ± 0.04(-2)	6.19 ± 0.04(-2)
^{134}I	1.98 ± 0.02(-1)	1.14 ± 0.02(-1)	4.6 ± 0.1 (-1)	2.27 ± 0.06(-1)	1.36 ± 0.03(-2)	**
^{135}I	7.8 ± 0.2 (-2)	6.1 ± 0.2 (-2)	6.3 ± 0.2 (-2)	5.0 ± 0.1 (-2)	4.23 ± 0.09(-2)	3.9 ± 0.1 (-2)
^{134}Cs	**	**	4.2 ± 0.4 (-3)	4.2 ± 0.2 (-3)	5.7 ± 0.2 (-3)	6.3 ± 0.2 (-3)
^{137}Cs	**	**	4.7 ± 0.4 (-3)	4.5 ± 0.2 (-3)	5.5 ± 0.3 (-3)	6.2 ± 0.2 (-3)
^{51}Cr	4.5 ± 0.3 (-2)	5.0 ± 0.3 (-2)	4.0 ± 0.3 (-2)	4.1 ± 0.2 (-2)	3.5 ± 0.2 (-2)	3.1 ± 0.2 (-2)
^{54}Mn	4.4 ± 0.4 (-3)	3.0 ± 0.3 (-3)	4.0 ± 0.4 (-3)	3.3 ± 0.2 (-3)	4.2 ± 0.2 (-3)	3.2 ± 0.2 (-3)
^{60}Co	**	**	6 ± 3 (-4)	5 ± 1 (-4)	6 ± 1 (-4)	6 ± 1 (-4)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-24-82 0710	4-24-82 0810	4-24-82 1010	4-24-82 1215	4-24-82 1410	4-24-82 1620
^{131}I	6.08 ± 0.05(-2)	6.15 ± 0.04(-2)	6.00 ± 0.04(-2)	7.00 ± 0.04(-2)	5.82 ± 0.04(-2)	9.96 ± 0.05(-2)
^{132}I	8.89 ± 0.08(-2)	8.24 ± 0.07(-2)	7.90 ± 0.08(-2)	7.86 ± 0.07(-2)	6.61 ± 0.07(-2)	7.19 ± 0.08(-2)
^{133}I	6.30 ± 0.04(-2)	5.89 ± 0.04(-2)	5.27 ± 0.04(-2)	5.38 ± 0.04(-2)	4.18 ± 0.03(-2)	5.92 ± 0.04(-2)
^{134}I	**	**	**	**	**	**
^{135}I	3.4 ± 0.1 (-2)	2.92 ± 0.08(-2)	2.28 ± 0.07(-2)	1.73 ± 0.07(-2)	1.19 ± 0.06(-2)	1.42 ± 0.07(-2)
^{134}Cs	6.3 ± 0.2 (-3)	6.2 ± 0.2 (-3)	6.3 ± 0.2 (-3)	7.0 ± 0.2 (-3)	5.7 ± 0.2 (-3)	1.32 ± 0.02(-2)
^{137}Cs	6.9 ± 0.2 (-3)	6.5 ± 0.2 (-3)	5.9 ± 0.2 (-3)	7.1 ± 0.2 (-3)	5.5 ± 0.2 (-3)	1.20 ± 0.02(-2)
^{51}Cr	2.9 ± 0.3 (-2)	2.0 ± 0.2 (-2)	1.4 ± 0.1 (-2)	6 ± 1 (-3)	**	**
^{54}Mn	3.6 ± 0.2 (-3)	2.6 ± 0.2 (-3)	2.0 ± 0.2 (-3)	2.1 ± 0.2 (-3)	**	**
^{60}Co	**	6 ± 1 (-4)	5.4 ± 0.9 (-4)	1.4 ± 0.1 (-3)	**	**

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-24-82 1810	4-24-82 1953	4-24-82 2135	4-25-82 0100	4-25-82 0320	4-25-82 0445
^{131}I	1.61 ± 0.01(-1)	1.66 ± 0.01(-1)	1.60 ± 0.01(-1)	1.31 ± 0.01(-1)	1.01 ± 0.01(-1)	9.70 ± 0.05(-2)
^{132}I	7.4 ± 0.1 (-2)	7.6 ± 0.1 (-2)	7.4 ± 0.1 (-2)	6.7 ± 0.1 (-2)	4.44 ± 0.04(-2)	6.15 ± 0.07(-2)
^{133}I	8.66 ± 0.08(-2)	8.37 ± 0.08(-2)	7.87 ± 0.07(-2)	5.94 ± 0.07(-2)	4.20 ± 0.03(-2)	4.02 ± 0.03(-2)
^{134}I	1.21 ± 0.08(-2)	2.1 ± 0.1 (-2)	1.5 ± 0.1 (-2)	**	1.08 ± 0.02(-2)	4.0 ± 0.1 (-2)
^{135}I	1.8 ± 0.1 (-2)	1.6 ± 0.1 (-2)	1.4 ± 0.1 (-2)	1.1 ± 0.1 (-2)	8.1 ± 0.5 (-3)	8.4 ± 0.5 (-3)
^{134}Cs	2.52 ± 0.05(-2)	2.75 ± 0.05(-2)	2.70 ± 0.05(-2)	2.41 ± 0.05(-2)	1.95 ± 0.03(-2)	1.91 ± 0.03(-2)
^{137}Cs	2.18 ± 0.05(-2)	2.47 ± 0.05(-2)	2.48 ± 0.05(-2)	2.15 ± 0.04(-2)	1.73 ± 0.02(-2)	1.74 ± 0.03(-2)
^{51}Cr	8 ± 3 (-3)	6 ± 3 (-3)	**	**	**	**
^{54}Mn	3.9 ± 0.3 (-3)	4.1 ± 0.3 (-3)	3 ± 2 (-4)	2.7 ± 0.2 (-3)	2.5 ± 0.1 (-3)	2.3 ± 0.1 (-3)
^{60}Co	2.5 ± 0.3 (-3)	3.1 ± 0.2 (-3)	1.60 ± 0.02(-3)	2.8 ± 0.2 (-3)	2.7 ± 0.1 (-3)	2.7 ± 0.1 (-3)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-25-82 0700	4-25-82 0900	4-25-82 1100	4-25-82 1300	4-25-82 1455	4-25-82 1655
^{131}I	8.32 ± 0.07(-2)	7.26 ± 0.04(-2)	6.51 ± 0.04(-2)	3.79 ± 0.03(-2)	3.46 ± 0.03(-2)	3.17 ± 0.03(-2)
^{132}I	6.1 ± 0.1 (-2)	5.72 ± 0.06(-2)	5.58 ± 0.06(-2)	3.85 ± 0.05(-2)	3.61 ± 0.06(-2)	3.45 ± 0.05(-2)
^{133}I	3.35 ± 0.05(-2)	2.73 ± 0.03(-2)	2.28 ± 0.03(-2)	1.28 ± 0.02(-2)	1.14 ± 0.02(-2)	9.4 ± 0.2 (-3)
^{134}I	3.00 ± 0.09(-2)	1.75 ± 0.05(-2)	2.71 ± 0.05(-2)	**	**	**
^{135}I	**	7.4 ± 0.5 (-3)	5.0 ± 0.5 (-3)	**	**	**
^{134}Cs	1.68 ± 0.04(-2)	1.42 ± 0.02(-2)	1.33 ± 0.03(-2)	8.5 ± 0.2 (-3)	8.3 ± 0.2 (-3)	6.1 ± 0.2 (-3)
^{137}Cs	1.51 ± 0.04(-2)	1.31 ± 0.02(-2)	1.17 ± 0.03(-2)	7.4 ± 0.2 (-3)	7.0 ± 0.2 (-3)	5.8 ± 0.2 (-3)
^{51}Cr	8 ± 2 (-3)	7 ± 1 (-3)	3 ± 1 (-3)	5 ± 1 (-3)	**	**
^{54}Mn	2.6 ± 0.2 (-3)	1.7 ± 0.2 (-3)	4.7 ± 0.2 (-3)	1.00 ± 0.02(-2)	1.10 ± 0.02(-2)	1.38 ± 0.02(-2)
^{60}Co	3.3 ± 0.2 (-3)	1.4 ± 0.1 (-3)	6.8 ± 0.2 (-3)	1.74 ± 0.03(-2)	1.91 ± 0.02(-2)	2.88 ± 0.03(-2)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-25-82 1900	4-28-82 1532	4-28-82 1735	4-28-82 1932	4-28-82 2125
^{131}I	2.71 ± 0.04(-2)	3.26 ± 0.07(-3)	2.99 ± 0.07(-3)	2.60 ± 0.06(-3)	2.28 ± 0.06(-3)
^{132}I	3.31 ± 0.07(-2)	9.2 ± 0.1 (-3)	9.0 ± 0.1 (-3)	9.1 ± 0.1 (-3)	8.7 ± 0.1 (-3)
^{133}I	7.3 ± 0.4 (-3)	**	**	**	**
^{134}Cs	6.0 ± 0.4 (-3)	5.6 ± 0.1 (-3)	5.5 ± 0.1 (-3)	4.38 ± 0.09(-3)	3.88 ± 0.08(-3)
^{137}Cs	5.6 ± 0.3 (-3)	5.56 ± 0.08(-3)	5.45 ± 0.08(-3)	4.41 ± 0.07(-3)	3.82 ± 0.07(-3)
^{51}Cr	**	3.3 ± 0.4 (-3)	1.7 ± 0.4 (-3)	1.7 ± 0.3 (-3)	1.2 ± 0.3 (-3)
^{54}Mn	1.82 ± 0.04(-2)	9.0 ± 0.1 (-3)	7.1 ± 0.1 (-3)	5.83 ± 0.09(-3)	4.46 ± 0.08(-3)
^{60}Co	4.07 ± 0.07(-2)	1.58 ± 0.02(-2)	1.36 ± 0.01(-2)	1.12 ± 0.01(-2)	8.8 ± 0.1 (-3)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-28-82 2324	4-29-82 0126	4-29-82 0327	4-29-82 0527	4-29-82 0735	4-29-82 0932
^{131}I	2.05 ± 0.05(-3)	1.77 ± 0.05(-3)	1.63 ± 0.05(-3)	**	1.16 ± 0.04(-3)	1.22 ± 0.04(-3)
^{132}I	8.3 ± 0.1 (-3)	8.2 ± 0.1 (-3)	8.0 ± 0.2 (-3)	**	6.7 ± 0.1 (-3)	6.9 ± 0.1 (-3)
^{134}Cs	3.14 ± 0.07(-3)	2.63 ± 0.06(-3)	2.53 ± 0.07(-3)	**	1.54 ± 0.06(-3)	1.57 ± 0.06(-3)
^{137}Cs	3.26 ± 0.06(-3)	2.70 ± 0.07(-3)	2.32 ± 0.05(-3)	2.00 ± 0.05(-3)	1.57 ± 0.04(-3)	1.49 ± 0.04(-3)
^{51}Cr	**	1.1 ± 0.3 (-3)	**	**	**	**
^{54}Mn	3.25 ± 0.07(-3)	3.03 ± 0.07(-3)	2.47 ± 0.06(-3)	**	1.34 ± 0.05(-3)	1.66 ± 0.05(-3)
^{60}Co	6.7 ± 0.1 (-3)	6.1 ± 0.1 (-3)	4.91 ± 0.09(-3)	**	3.12 ± 0.07(-3)	3.01 ± 0.07(-3)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS
DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-29-82 1130	Date and Time 4-29-82 1333
^{131}I	1.19 ± 0.04(-3)	1.21 ± 0.04(-3)
^{132}I	6.9 ± 0.1 (-3)	7.1 ± 0.1 (-3)
^{134}Cs	1.53 ± 0.05(-3)	1.39 ± 0.06(-3)
^{137}Cs	1.47 ± 0.04(-3)	1.32 ± 0.04(-3)
^{51}Cr	**	**
^{54}Mn	1.67 ± 0.05(-3)	1.51 ± 0.05(-3)
^{60}Co	3.02 ± 0.07(-3)	2.84 ± 0.07(-3)

** Not reported by plant.

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 9-29-82 1920	9-30-82 0330	9-30-82 0731	9-30-82 1540	9-30-82 2020	10-1-82 0020
^{131}I	**	**	**	1.27 ± 0.17(-4)	7.52 ± 1.20(-5)	6.41 ± 1.00(-5)
^{132}I	**	**	**	4.14 ± 0.38(-4)	4.35 ± 0.30(-4)	3.99 ± 0.24(-4)
^{133}I	1.94 ± 0.84(-5)	2.26 ± 0.15(-4)	4.94 ± 0.16(-4)	1.56 ± 0.02(-3)	1.48 ± 0.02(-3)	9.22 ± 0.17(-4)
^{134}I	9.60 ± 0.37(-4)	1.82 ± 0.04(-3)	1.01 ± 0.01(-2)	2.10 ± 0.02(-2)	7.89 ± 0.11(-3)	2.02 ± 0.05(-3)
^{135}I	**	**	1.24 ± 0.07(-3)	3.65 ± 0.10(-3)	2.50 ± 0.08(-3)	1.05 ± 0.06(-3)
^{58}Co	5.03 ± 0.94(-5)	1.81 ± 0.17(-4)	2.92 ± 0.19(-4)	2.73 ± 0.21(-4)	1.27 ± 0.15(-4)	2.68 ± 0.18(-4)
^{60}Co	1.30 ± 0.02(-3)	2.49 ± 0.04(-3)	4.17 ± 0.05(-3)	3.46 ± 0.04(-3)	1.47 ± 0.03(-3)	2.84 ± 0.04(-3)

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	10-1-82 0415	10-1-82 0830	10-1-82 1256	10-1-82 1705	10-1-82 2045	10-2-82 0125
^{131}I	1.86 ± 0.46(-5)	3.12 ± 0.95(-5)	4.32 ± 1.00(-5)	**	**	**
^{132}I	2.45 ± 0.84(-5)	4.04 ± 0.21(-4)	2.69 ± 0.30(-4)	3.23 ± 0.36(-4)	2.64 ± 0.32(-4)	2.42 ± 0.38(-4)
^{133}I	2.25 ± 0.08(-4)	4.69 ± 0.15(-4)	4.00 ± 0.18(-4)	2.69 ± 0.18(-4)	1.57 ± 0.19(-4)	1.57 ± 0.22(-4)
^{134}I	**	**	**	**	**	**
^{135}I	2.16 ± 0.23(-4)	2.65 ± 0.44(-4)	**	**	**	**
^{58}Co	5.24 ± 0.66(-5)	2.70 ± 0.16(-4)	7.03 ± 0.22(-4)	9.13 ± 0.26(-4)	1.21 ± 0.03(-3)	1.81 ± 0.04(-3)
^{60}Co	5.48 ± 0.16(-4)	3.16 ± 0.04(-3)	8.40 ± 0.06(-3)	1.18 ± 0.01(-2)	1.60 ± 0.01(-2)	2.72 ± 0.01(-2)

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 10-2-82 0500	10-2-82 0800	10-2-82 1200	10-2-82 1500	10-2-82 2120	Separation 2120
^{131}I	**	**	**	1.0 ± 0.3 (-4)	**	2.39 ± 0.15(-4)
^{132}I	5.07 ± 0.56(-4)	4.65 ± 0.79(-4)	8.34 ± 0.96(-4)	5.82 ± 0.63(-4)	**	1.69 ± 0.03(-3)
^{133}I	**	1.20 ± 0.05(-3)	1.78 ± 0.07(-3)	1.63 ± 0.41(-5)	5.44 ± 0.13(-3)	5.19 ± 0.28(-3)
^{134}I	**	9.01 ± 0.04(-2)	6.07 ± 0.05(-2)	1.61 ± 0.02(-2)	4.88 ± 0.05(-2)	3.31 ± 0.02(-2)
^{135}I	**	2.02 ± 0.12(-3)	3.16 ± 0.19(-3)	3.62 ± 0.16(-3)	1.31 ± 0.05(-2)	1.36 ± 0.01(-2)
^{58}Co	2.48 ± 0.05(-3)	2.19 ± 0.05(-3)	6.47 ± 0.57(-4)	2.50 ± 0.34(-4)	**	**
^{60}Co	3.89 ± 0.02(-2)	3.16 ± 0.01(-2)	9.78 ± 0.12(-3)	2.87 ± 0.07(-3)	1.95 ± 0.15(-3)	**

Table B.3-102 (cont'd)
UNIT NO. 2 SELECTED REACTOR COOLANT SYSTEM CONCENTRATIONS DURING POWER TRANSIENTS
(PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 10-2-82 2300	10-3-82 0455	10-3-82 0700
^{131}I	3.99 ± 0.59(-4)	2.98 ± 0.49(-4)	3.41 ± 0.48(-4)
^{132}I	1.81 ± 0.11(-3)	2.28 ± 0.08(-3)	2.85 ± 0.19(-3)
^{133}I	6.80 ± 0.09(-3)	7.02 ± 0.08(-3)	6.10 ± 0.08(-3)
^{134}I	5.03 ± 0.03(-2)	3.52 ± 0.03(-2)	5.01 ± 0.05(-2)
^{135}I	1.45 ± 0.03(-2)	1.36 ± 0.03(-2)	1.38 ± 0.03(-2)
^{58}Co	1.83 ± 0.56(-4)	**	5.29 ± 0.59(-4)
^{60}Co	1.91 ± 0.08(-3)	1.18 ± 0.06(-3)	6.25 ± 0.10(-3)

** Not reported by plant.

Table B.3-103
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET
RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-22-82 0815	4-22-82 1155	4-22-82 1604	4-22-82 2015	4-23-82 0020	4-23-82 0410
^{131}I	**	3.3 ± 0.8 (-4)	3.5 ± 0.7 (-4)	4.1 ± 0.6 (-4)	4.9 ± 0.4 (-4)	3.7 ± 0.4 (-4)
^{132}I	7.3 ± 0.2 (-3)	7.4 ± 0.2 (-3)	8.5 ± 0.2 (-3)	7.1 ± 0.2 (-3)	6.9 ± 0.1 (-3)	6.3 ± 0.1 (-3)
^{133}I	4.9 ± 0.1 (-3)	4.7 ± 0.1 (-3)	4.30 ± 0.09(-3)	4.7 ± 0.1 (-3)	4.49 ± 0.06(-3)	4.84 ± 0.06(-3)
^{134}I	2.06 ± 0.03(-2)	1.91 ± 0.03(-2)	1.97 ± 0.04(-2)	1.95 ± 0.06(-2)	1.65 ± 0.02(-2)	1.31 ± 0.02(-2)
^{135}I	8.5 ± 0.4 (-3)	8.0 ± 0.4 (-3)	8.2 ± 0.3 (-3)	8.9 ± 0.4 (-3)	9.8 ± 0.3 (-3)	1.02 ± 0.02(-2)
^{51}Cr	2.3 ± 0.7 (-3)	3.1 ± 0.6 (-3)	4.0 ± 0.5 (-3)	4.2 ± 0.5 (-3)	3.9 ± 0.3 (-3)	4.3 ± 0.3 (-3)
^{54}Mn	7.7 ± 0.8 (-4)	**	6.8 ± 0.6 (-4)	**	**	**
^{60}Co	**	**	2.5 ± 0.5 (-4)	1.6 ± 0.4 (-4)	**	**

** Not reported by plant.

Table B.3-103 (cont'd)
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET
RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-23-82 0835	4-23-82 1227	4-23-82 1634	4-23-82 2030	4-23-82 2200	4-24-82 0043
^{131}I	6 ± 1 (-4)	6 ± 1 (-4)	5.5 ± 0.8 (-4)	7.5 ± 0.6 (-4)	7.9 ± 0.6 (-4)	9.8 ± 0.7 (-4)
^{132}I	8.8 ± 0.2 (-3)	9.8 ± 0.3 (-3)	8.8 ± 0.3 (-3)	1.02 ± 0.02(-2)	1.12 ± 0.02(-2)	1.03 ± 0.02(-2)
^{133}I	6.9 ± 0.1 (-3)	6.4 ± 0.1 (-3)	6.9 ± 0.1 (-3)	7.62 ± 0.09(-3)	7.67 ± 0.09(-3)	7.83 ± 0.09(-3)
^{134}I	1.95 ± 0.02(-2)	2.76 ± 0.06(-2)	2.2 ± 0.1 (-2)	2.25 ± 0.03(-2)	2.22 ± 0.05(-2)	1.35 ± 0.02(-2)
^{135}I	1.15 ± 0.04(-2)	1.17 ± 0.05(-2)	1.25 ± 0.05(-2)	1.36 ± 0.04(-2)	1.40 ± 0.04(-2)	1.19 ± 0.03(-2)
^{51}Cr	4.7 ± 0.8 (-3)	4.3 ± 0.8 (-3)	4.5 ± 0.6 (-3)	5.2 ± 0.4 (-3)	5.0 ± 0.4 (-3)	5.7 ± 0.5 (-3)
^{54}Mn	**	**	9.5 ± 0.8 (-4)	8.5 ± 0.6 (-4)	6.3 ± 0.6 (-4)	8.8 ± 0.6 (-4)
^{60}Co	**	**	1.8 ± 0.6 (-4)	**	**	1.4 ± 0.4 (-4)

** Not reported by plant.

Table B.3-103 (cont'd)
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET
RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-24-82 0253	4-24-82 0400	4-24-82 0520	4-24-82 0600	4-24-82 0710	4-24-82 0810
^{131}I	1.20 ± 0.02(-2)	1.27 ± 0.02(-2)	1.49 ± 0.02(-2)	1.59 ± 0.02(-2)	1.72 ± 0.01(-2)	1.69 ± 0.01(-2)
^{132}I	2.15 ± 0.04(-2)	2.04 ± 0.04(-2)	2.09 ± 0.04(-2)	2.05 ± 0.04(-2)	2.07 ± 0.02(-2)	1.84 ± 0.02(-2)
^{133}I	1.89 ± 0.02(-2)	1.91 ± 0.02(-2)	1.92 ± 0.02(-2)	**	1.91 ± 0.01(-2)	1.81 ± 0.01(-2)
^{134}I	9.2 ± 0.3 (-3)	5.37 ± 0.03(-3)	1.9 ± 0.2 (-3)	**	**	**
^{135}I	1.82 ± 0.06(-2)	1.51 ± 0.06(-2)	1.37 ± 0.05(-2)	1.34 ± 0.05(-2)	1.22 ± 0.03(-2)	1.01 ± 0.03(-2)
^{134}Cs	6 ± 1 (-4)	7 ± 1 (-4)	1.1 ± 0.1 (-3)	1.3 ± 0.1 (-3)	1.30 ± 0.07(-3)	9.3 ± 0.7 (-4)
^{137}Cs	8 ± 1 (-4)	**	10 ± 1 (-4)	1.04 ± 0.09(-3)	1.35 ± 0.06(-3)	1.26 ± 0.05(-3)
^{51}Cr	7.7 ± 0.9 (-3)	7.3 ± 0.8 (-3)	5.4 ± 0.8 (-3)	6.7 ± 0.8 (-3)	4.1 ± 0.5 (-3)	2.8 ± 0.5 (-3)
^{54}Mn	1.2 ± 0.1 (-3)	10 ± 1 (-4)	**	3 ± 2 (-4)	7.6 ± 0.6 (-4)	**
^{60}Co	**	**	1.8 ± 0.9 (-4)	**	9.8 ± 0.8 (-4)	1.5 ± 0.5 (-4)

** Not reported by plant.

Table B.3-103 (cont'd)
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET
RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-24-82 1210	4-24-82 1410	4-24-82 1620	4-24-82 2135	4-25-82 0100	4-25-82 0320
^{131}I	1.11 ± 0.01(-2)	1.26 ± 0.01(-2)	1.65 ± 0.01(-2)	1.88 ± 0.02(-2)	2.21 ± 0.02(-2)	2.05 ± 0.02(-2)
^{132}I	8.8 ± 0.1 (-3)	8.9 ± 0.2 (-3)	1.12 ± 0.02(-2)	7.9 ± 0.2 (-3)	7.8 ± 0.3 (-3)	4.5 ± 0.2 (-3)
^{133}I	8.77 ± 0.09(-3)	9.26 ± 0.09(-3)	1.03 ± 0.01(-2)	9.2 ± 0.2 (-3)	1.02 ± 0.02(-2)	8.3 ± 0.1 (-3)
^{134}I	**	**	**	1.2 ± 0.1 (-3)	**	7 ± 1 (-4)
^{135}I	3.7 ± 0.2 (-3)	2.7 ± 0.2 (-3)	2.9 ± 0.2 (-3)	**	1.5 ± 0.2 (-3)	**
^{134}Cs	9.0 ± 0.5 (-4)	1.14 ± 0.06(-3)	1.76 ± 0.06(-3)	3.3 ± 0.1 (-3)	4.1 ± 0.1 (-3)	4.1 ± 0.1 (-3)
^{137}Cs	1.01 ± 0.05(-3)	9.8 ± 0.5 (-4)	1.70 ± 0.06(-3)	2.8 ± 0.1 (-3)	3.5 ± 0.1 (-3)	3.4 ± 0.1 (-3)
^{54}Mn	3.7 ± 0.4 (-4)	4.2 ± 0.4 (-4)	5.1 ± 0.4 (-4)	1.4 ± 0.6 (-4)	5.1 ± 0.6 (-4)	**
^{60}Co	2.2 ± 0.3 (-4)	2.1 ± 0.3 (-4)	3.5 ± 0.3 (-4)	3.2 ± 0.4 (-4)	5.4 ± 0.5 (-4)	5.3 ± 0.5 (-4)

** Not reported by plant.

Table B.3-103 (cont'd)
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET
RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-25-82 0445	4-25-82 0700	4-25-82 0900	4-28-82 1532	4-28-82 1735	4-28-82 1932
^{131}I	2.24 ± 0.01(-2)	1.76 ± 0.01(-2)	1.68 ± 0.01(-2)	7.6 ± 0.3 (-4)	6.9 ± 0.3 (-4)	5.8 ± 0.3 (-4)
^{132}I	7.2 ± 0.2 (-3)	8.0 ± 0.1 (-3)	7.9 ± 0.1 (-3)	1.07 ± 0.07(-3)	1.20 ± 0.05(-3)	1.03 ± 0.06(-3)
^{133}I	9.2 ± 0.1 (-3)	6.77 ± 0.08(-3)	6.26 ± 0.08(-3)	**	**	**
^{134}I	**	2.6 ± 0.1 (-3)	3.14 ± 0.01(-3)	**	**	**
^{135}I	1.8 ± 0.2 (-3)	1.5 ± 0.1 (-3)	1.1 ± 0.1 (-3)	**	**	**
^{134}Cs	4.45 ± 0.08(-3)	3.40 ± 0.06(-3)	3.25 ± 0.07(-3)	1.12 ± 0.05(-3)	7.5 ± 0.4 (-4)	9.1 ± 0.4 (-4)
^{137}Cs	**	**	3.07 ± 0.07(-3)	1.03 ± 0.04(-3)	7.4 ± 0.3 (-4)	9.0 ± 0.3 (-4)
^{51}Cr	6.2 ± 0.3 (-3)	**	**	2.6 ± 0.2 (-3)	8 ± 1 (-4)	8 ± 2 (-4)
^{54}Mn	2.63 ± 0.06(-3)	3.8 ± 0.4 (-4)	4.0 ± 0.4 (-4)	2.66 ± 0.06(-3)	7.9 ± 0.3 (-4)	9.4 ± 0.4 (-4)
^{60}Co	2.07 ± 0.06(-3)	5.3 ± 0.3 (-4)	5.9 ± 0.4 (-4)	3.88 ± 0.08(-3)	1.51 ± 0.05(-3)	1.99 ± 0.06(-3)

** Not reported by plant.

Table B.3-103 (cont'd)
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET
RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time					
	4-28-82 2125	4-28-82 2324	4-29-82 0126	4-29-82 0327	4-29-82 0527	4-29-82 0734
^{131}I	6.3 ± 0.3 (-4)	**	5.2 ± 0.2 (-4)	4.6 ± 0.2 (-4)	4.4 ± 0.2 (-4)	3.6 ± 0.2 (-4)
^{132}I	1.20 ± 0.05(-3)	**	1.16 ± 0.06(-3)	1.22 ± 0.07(-3)	1.10 ± 0.05(-3)	1.09 ± 0.05(-3)
^{134}Cs	7.3 ± 0.5 (-4)	6.3 ± 0.4 (-4)	7.3 ± 0.4 (-4)	6.9 ± 0.4 (-4)	4.9 ± 0.3 (-4)	4.3 ± 0.4 (-4)
^{137}Cs	8.4 ± 0.3 (-4)	7.7 ± 0.3 (-4)	6.1 ± 0.3 (-4)	5.5 ± 0.3 (-4)	4.9 ± 0.2 (-4)	3.8 ± 0.2 (-4)
^{51}Cr	1.0 ± 0.2 (-3)	**	6 ± 1 (-4)	5 ± 1 (-4)	4 ± 2 (-4)	4 ± 1 (-4)
^{54}Mn	9.7 ± 0.4 (-4)	**	5.5 ± 0.3 (-4)	4.6 ± 0.2 (-4)	4.7 ± 0.2 (-4)	3.4 ± 0.2 (-4)
^{60}Co	**	**	1.33 ± 0.05(-3)	1.10 ± 0.04(-3)	8.9 ± 0.4 (-4)	7.6 ± 0.3 (-4)

** Not reported by plant.

Table B.3-103 (cont'd)
UNIT NO. 2 SELECTED REACTOR WATER CLEANUP "A" OUTLET RADIONUCLIDE CONCENTRATIONS DURING POWER TRANSIENTS (PLANT DATA)
(microcuries/gram)

Nuclide	Date and Time 4-29-82 0932	4-29-82 1130	4-29-82 1333
^{131}I	8.6 ± 0.3 (-4)	3.4 ± 0.2 (-4)	3.3 ± 0.2 (-4)
^{132}I	9.7 ± 0.6 (-4)	1.04 ± 0.06(-3)	9.5 ± 0.4 (-4)
^{134}Cs	5.4 ± 0.4 (-4)	4.1 ± 0.3 (-4)	3.4 ± 0.3 (-4)
^{137}Cs	4.0 ± 0.3 (-4)	4.4 ± 0.2 (-4)	3.1 ± 0.3 (-4)
^{51}Cr	1.3 ± 0.2 (-3)	**	**
^{54}Mn	1.18 ± 0.04(-3)	4.0 ± 0.3 (-4)	3.7 ± 0.2 (-4)
^{60}Co	1.92 ± 0.05(-3)	9.1 ± 0.4 (-4)	6.6 ± 0.3 (-4)

** Not reported by plant.

Table B.3-104a
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 1644

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	1.8 ± 0.1 (-3)
^{131}I	1.1 ± 0.3 (-6)	5.54 ± 0.06(-4)	5.55 ± 0.06(-4)	5.7 ± 0.2 (-4)
^{132}I	3.0 ± 0.3 (-5)	7.2 ± 0.1 (-3)	7.2 ± 0.1 (-3)	7.41 ± 0.07(-3)
^{133}I	1.82 ± 0.07(-5)	6.5 ± 0.1 (-3)	6.5 ± 0.1 (-3)	6.1 ± 0.2 (-3)
^{134}I	<7(-4)	1.9 ± 0.2 (-2)	1.9 ± 0.2 (-2)	1.73 ± 0.01(-2)
^{135}I	3.2 ± 0.3 (-5)	1.13 ± 0.01(-2)	1.13 ± 0.01(-2)	1.08 ± 0.01(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<8(-7)	7.9 ± 0.3 (-6)	a	1.18 ± 0.03(-5)
^{136}Cs	1.1 ± 0.6 (-6)	1.26 ± 0.05(-5)	1.37 ± 0.08(-5)[b]	1.80 ± 0.06(-5)
^{137}Cs	8 ± 3 (-7)	1.13 ± 0.07(-5)	1.21 ± 0.08(-5)[b]	1.76 ± 0.07(-5)
^{138}Cs	*	*	*	2.21 ± 0.06(-3)
^{139}Cs	*	*	*	*
^{24}Na	9.1 ± 0.2 (-5)	5,45 + 0.08(-3)	5.54 ± 0.08(-3)[b]	6.1 ± 0.1 (-3)
^{51}Cr	5.3 ± 0.5 (-5)	3.84 ± 0.02(-3)	3.89 ± 0.02(-3)[b]	4.16 ± 0.02(-3)
^{54}Mn	3.9 ± 0.5 (-6)	2.7 ± 0.3 (-6)	6.6 ± 0.6 (-6)	7.9 ± 0.4 (-6)
^{56}Mn	3.7 ± 0.3 (-5)	<4(-4)	a	1.4 ± 0.4 (-4)
^{59}Fe	1.8 ± 0.8 (-6)	<9(-7)	a	<3(-6)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 1644

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	*	*	*	*
^{58}Co	1.7 ± 0.4 (-6)	5.1 ± 0.3 (-6)	6.8 ± 0.5 (-6)[b]	1.8 ± 0.1 (-5)
^{60}Co	4.9 ± 0.5 (-6)	7.7 ± 0.4 (-6)	1.26 ± 0.06(-5)[b]	2.49 + 0.06(-5)
^{65}Zn	<4(-6)	5.1 ± 0.5 (-6)	a	1.02 + 0.08(-5)
^{91}Sr	6.2 ± 0.3 (-5)	2.7 ± 0.3 (-4)	3.3 ± 0.3 (-4)[b]	7.9 ± 0.4 (-4)
^{91m}Y	<3(-5)	<4(-5)	a	*
^{93}Y	8 ± 3 (-6)	<3(-4)	a	<7(-4)
^{95}Zr	*	*	*	*
^{95}Nb	*	*	*	*
^{99}Mo	<5(-6)	8.6 ± 0.2 (-4)	8.6 ± 0.2 (-4)[b]	9.7 ± 0.2 (-4)
^{103}Ru	<2(-6)	<5(-7)	a	9 ± 4 (-7)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	<5(-4)	<2(-2)	a	8 ± 1 (-4)
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	<6(-7)	<6(-6)	a	<8(-6)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 1644

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	4.7 ± 0.3 (-4)	1.8 ± 0.6 (-3)	2.3 ± 0.6 (-3)	2.20 ± 0.07(-3)
^{140}Ba	4.2 ± 0.2 (-5)	6.0 ± 0.3 (-5)	1.02 ± 0.04(-4)[b]	1.72 ± 0.03(-4)
^{140}La	<3(-6)	<9(-6)	a	3 ± 1 (-5)
^{141}Ce	<2(-6)	<3(-6)	a	1.8 ± 0.6 (-6)
^{143}Ce	<2(-6)	<4(-5)	a	<5(-5)
^{144}Ce	*	*	*	*
^{152}Eu	<2(-6)	<3(-6)	a	<3(-6)
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	*	*	*	*
^{239}Np	3.42 ± 0.09(-5)	1.83 ± 0.02(-3)	1.86 ± 0.02(-3)[b]	2.4 ± 0.1 (-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 2229

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	<5(-4)	<8(-3)	a	1.7 ± 0.2 (-3)
^{131}I	5.4 ± 0.5 (-6)	7.3 ± 0.1 (-4)	7.3 ± 0.1 (-4)	7.19 ± 0.07(-4)
^{132}I	5.1 ± 0.3 (-5)	9.9 ± 0.1 (-3)	1.00 ± 0.01(-2)	9.3 ± 0.2 (-3)
^{133}I	4.8 ± 0.1 (-5)	7.1 ± 0.2 (-3)	7.1 ± 0.2 (-3)	7.6 ± 0.3 (-3)
^{134}I	1.5 ± 0.2 (-4)	2.09 ± 0.02(-2)	2.10 ± 0.02(-2)	2.14 ± 0.02(-2)
^{135}I	8.8 ± 0.4 (-5)	1.36 ± 0.01(-2)	1.37 ± 0.01(-2)[b]	1.27 ± 0.02(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	<2(-3)
^{134}Cs	<3(-6)	1.07 ± 0.04(-5)	a	1.28 ± 0.04(-5)
^{136}Cs	<2(-6)	1.50 ± 0.06(-5)	a	1.98 ± 0.09(-5)
^{137}Cs	<2(-6)	1.41 ± 0.05(-5)	a	1.83 ± 0.06(-5)
^{138}Cs	<6(-4)	3.4 ± 0.4 (-3)	a	2.5 ± 0.2 (-3)
^{139}Cs	*	*	*	<2(-2)
^{24}Na	1.18 ± 0.03(-4)	7.05 + 0.06(-3)	7.17 ± 0.06(-3)[b]	7.8 ± 0.2 (-3)
^{51}Cr	1.67 ± 0.06(-4)	4.19 ± 0.04(-3)	4.36 ± 0.04(-3)	4.34 ± 0.02(-3)
^{54}Mn	3.1 ± 0.1 (-5)	5.2 ± 0.5 (-6)	3.6 ± 0.1 (-5)[b]	2.84 ± 0.08(-5)
^{56}Mn	5.6 ± 0.1 (-4)	<3(-4)	a	8 ± 1 (-4)
^{59}Fe	3.7 ± 0.2 (-5)	4.4 ± 0.7 (-6)	4.2 ± 0.2 (-5)[b]	2.5 ± 0.1 (-5)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 2229

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	*	*	*	*
^{58}Co	1.0 ± 0.1 (-5)	6.6 ± 0.9 (-6)	1.6 ± 0.1 (-5)[b]	2.5 ± 0.2 (-5)
^{60}Co	2.34 ± 0.08(-5)	1.02 ± 0.05(-5)	3.36 ± 0.09(-5)[b]	4.02 + 0.07(-5)
^{65}Zn	<6(-6)	5.1 ± 0.7 (-6)	a	9.2 + 0.9 (-6)
^{91}Sr	7.9 ± 0.4 (-5)	4.6 ± 0.4 (-4)	5.4 ± 0.4 (-4)[b]	1.0 ± 0.1 (-3)
^{91m}Y	*	<4(-4)	a, *	1.8 ± 0.9 (-4)
^{93}Y	*	*	*	*
^{95}Zr	<5(-6)	<1(-6)	a	1.5 ± 0.6 (-6)
^{95}Nb	<3(-6)	<8(-7)	a	<1(-6)
^{99}Mo	<2(-5)	1.01 ± 0.02(-3)	1.01 ± 0.02(-3)	1.00 ± 0.03(-3)
^{103}Ru	2.7 ± 0.7 (-6)	<2(-6)	a	2.3 ± 0.3 (-6)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	<5(-6)	<7(-7)	a	<9(-7)
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	<2(-4)	1.6 ± 0.6 (-3)	1.6 ± 0.6 (-3)	<4(-3)
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	1.2 ± 0.4 (-6)	<2(-5)	a	<6(-6)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-23-82
Time: 2229

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	4.8 ± 0.1 (-4)	1.52 ± 0.09(-3)	2.00 ± 0.09(-3)	2.3 ± 0.2 (-3)
^{140}Ba	4.5 ± 0.3 (-5)	1.39 ± 0.03(-4)	1.84 ± 0.04(-4)[b]	2.7 ± 0.2 (-5)
^{140}La	<5(-6)	<5(-5)	a	<9(-5)
^{141}Ce	1.4 ± 0.4 (-6)	<3(-6)	a	2.0 ± 0.6 (-6)
^{143}Ce	2.6 ± 0.5 (-6)	<4(-5)	a	<8(-5)
^{144}Ce	6 ± 2 (-6)	<6(-6)	a	<5(-6)
^{152}Eu	<4(-6)	<2(-6)	a	<4(-6)
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	7 ± 2 (-6)	<2(-4)	a	<4(-4)
^{239}Np	3.4 ± 0.1 (-5)	2.28 ± 0.03(-3)	2.31 ± 0.03(-3)[b]	2.81 ± 0.02(-3)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0430

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	6.7 ± 0.1 (-5)	1.08 ± 0.01(-2)	1.08 ± 0.01(-2)	1.05 ± 0.01(-2)
^{132}I	8 ± 2 (-5)	1.6 ± 0.1 (-2)	1.6 ± 0.1 (-2)	1.72 ± 0.01(-2)
^{133}I	9.5 ± 0.2 (-5)	1.60 ± 0.01(-2)	1.60 ± 0.01(-2)	1.54 ± 0.03(-2)
^{134}I	*	*	*	2.18 ± 0.05(-3)
^{135}I	7.5 ± 0.7 (-5)	1.24 ± 0.02(-2)	1.24 ± 0.02(-2)	1.24 ± 0.01(-2)
^{88}Rb	*	*	*	8 ± 3 (-4)
^{89}Rb	*	*	*	*
^{134}Cs	2.59 ± 0.08(-5)	5.26 ± 0.05(-4)	5.52 ± 0.05(-4)[b]	6.58 ± 0.05(-4)
^{136}Cs	8.8 ± 0.5 (-6)	1.76 ± 0.03(-4)	1.85 ± 0.04(-4)[b]	2.17 ± 0.05(-4)
^{137}Cs	3.8 ± 0.1 (-5)	6.46 ± 0.05(-4)	6.84 ± 0.05(-4)[b]	8.1 ± 0.1 (-4)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	1.07 ± 0.03(-4)	6.3 + 0.1 (-3)	6.4 ± 0.1 (-3)[b]	7.3 ± 0.1 (-3)
^{51}Cr	4.4 ± 0.3 (-5)	5.4 ± 0.2 (-3)	5.4 ± 0.2 (-3)	5.79 ± 0.05(-3)
^{54}Mn	6 ± 2 (-6)	8 ± 1 (-6)	1.4 ± 0.2 (-5)[b]	2.2 ± 0.1 (-5)
^{56}Mn	<1(-4)	<2(-3)	a	2.1 ± 0.4 (-4)
^{59}Fe	2.0 ± 0.9 (-6)	5 ± 2 (-6)	7 ± 2 (-6)	<8(-6)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0430

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	*	*	*	*
^{58}Co	*	*	*	*
^{60}Co	3.4 ± 0.5 (-6)	1.9 ± 0.1 (-5)	2.2 ± 0.1 (-5)[b]	5.3 + 0.2 (-5)
^{65}Zn	<2(-6)	<7(-6)	a	2.0 + 0.3 (-5)
^{91}Sr	1.39 ± 0.08(-4)	1.54 ± 0.08(-3)	1.64 ± 0.08(-3)[b]	3.74 ± 0.09(-3)
^{91m}Y	*	*	*	2.9 ± 0.5 (-4)
^{93}Y	<3(-5)	<2(-3)	a	<6(-4)
^{95}Zr	*	*	*	*
^{95}Nb	*	*	*	*
^{99}Mo	<2(-5)	1.77 ± 0.05(-3)	1.77 ± 0.05(-3)	1.99 ± 0.05(-3)
^{103}Ru	*	*	*	*
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	*	*	*	*

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER
DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0430

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	<2(-3)	<6(-2)	a, *	7 ± 1 (-4)
^{140}Ba	2.2 ± 0.2 (-4)	2.7 ± 0.1 (-3)	2.9 ± 0.1 (-3)[b]	3.9 ± 0.1 (-4)
^{140}La	4.6 ± 0.4 (-5)	**	4.6 ± 0.4 (-5)[b]	6 ± 2 (-5)
^{141}Ce	*	*	*	*
^{143}Ce	*	*	*	*
^{144}Ce	*	*	*	*
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	*	*	*	*
^{239}Np	8.1 ± 0.2 (-5)	6.30 ± 0.09(-3)	6.38 ± 0.09(-3)[b]	8.0 ± 0.1 (-3)

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0850

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	1.12 ± 0.01(-4)	1.49 ± 0.01(-2)	1.50 ± 0.01(-2)	1.55 ± 0.01(-2)
^{132}I	*	*	*	1.68 ± 0.01(-2)
^{133}I	1.21 ± 0.04(-4)	1.60 ± 0.02(-2)	1.61 ± 0.02(-2)	1.66 ± 0.05(-2)
^{134}I	*	*	*	1.1 ± 0.2 (-4)
^{135}I	*	*	*	8.83 ± 0.08(-3)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	4.31 ± 0.05(-5)	7.96 ± 0.07(-4)	8.39 ± 0.07(-4)[b]	1.02 ± 0.01(-3)
^{136}Cs	1.24 ± 0.04(-5)	2.42 ± 0.05(-4)	2.54 ± 0.05(-4)	2.69 ± 0.09(-4)
^{137}Cs	6.0 ± 0.1 (-5)	9.8 ± 0.1 (-4)	1.04 ± 0.01(-3)[b]	1.24 ± 0.01(-3)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	7.9 ± 0.9 (-5)	4.7 + 0.1 (-3)	4.7 ± 0.1 (-3)[b]	5.69 ± 0.06(-3)
^{51}Cr	2.0 ± 0.1 (-5)	2.80 ± 0.02(-3)	2.82 ± 0.02(-3)	2.99 ± 0.02(-3)
^{54}Mn	4.5 ± 0.3 (-6)	1.88 ± 0.09(-5)	2.33 ± 0.09(-5)[b]	4.0 ± 0.1 (-5)
^{56}Mn	*	*	*	2.3 ± 0.3 (-4)
^{59}Fe	2.2 ± 0.5 (-6)	<4(-6)	a	6 ± 3 (-6)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0850

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	*	*	*	*
^{58}Co	<9(-6)	<3(-5)	a	<9(-5)
^{60}Co	6.7 ± 0.3 (-6)	2.4 ± 0.1 (-5)	9.2 ± 0.2 (-5)b	6.8 + 0.2 (-5)
^{65}Zn	1.2 ± 0.5 (-6)	8 ± 2 (-6)	9 ± 2 (-6)b	1.6 + 0.3 (-5)
^{91}Sr	<7(-4)	<3(-3)	a	2.49 ± 0.04(-3)
^{91m}Y	*	*	*	2.1 ± 0.4 (-4)
^{93}Y	4.6 ± 0.4 (-3)	2.1 ± 0.2 (-2)	2.6 ± 0.2 (-2)b	4 ± 2 (-4)
^{95}Zr	*	*	*	*
^{95}Nb	*	*	*	*
^{99}Mo	<6(-6)	1.51 ± 0.02(-3)	1.51 ± 0.02(-3)	1.46 ± 0.05(-3)
^{103}Ru	4 ± 2 (-7)	<3(-6)	a	<4(-6)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	7 ± 3 (-7)	<3(-5)	a	<3(-5)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 0850

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	<1(-4)
^{140}Ba	5.6 ± 0.1 (-4)	2.74 ± 0.07(-4)	3.30 ± 0.07(-4)[b]	4.20 ± 0.08(-4)
^{140}La	1.06 ± 0.01(-3)	5.12 ± 0.04(-3)	6.18 ± 0.04(-3)[b]	6 ± 1 (-5)
^{141}Ce	*	*	*	*
^{143}Ce	*	*	*	*
^{144}Ce	*	*	*	*
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	<2(-5)	<8(-5)	a	<2(-4)
^{239}Np	1.19 ± 0.02(-4)	1.06 ± 0.01(-2)	1.13 ± 0.01(-2)[b]	1.29 ± 0.01(-2)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1143

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	3.81 ± 0.04(-5)	7.46 ± 0.05(-3)	7.50 ± 0.05(-3)	7.59 ± 0.04(-3)
^{132}I	<1(-3)	5.41 ± 0.08(-3)	6.4 ± 0.3 (-3)	5.90 ± 0.05(-3)
^{133}I	4.1 ± 0.2 (-5)	6.27 ± 0.05(-3)	6.31 ± 0.05(-3)b	6.9 ± 0.1 (-3)
^{134}I	*	<2(-3)	a, *	6 ± 2 (-5)
^{135}I	4 ± 2 (-5)	2.38 ± 0.03(-3)	2.42 ± 0.03(-3)b	2.58 ± 0.03(-3)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	6 ± 2 (-5)	5.17 ± 0.03(-4)	5.77 ± 0.04(-4)b	6.67 ± 0.05(-4)
^{136}Cs	1.91 ± 0.07(-5)	1.49 ± 0.02(-4)	1.68 ± 0.02(-4)b	1.86 ± 0.03(-4)
^{137}Cs	7.9 ± 0.1 (-5)	6.1 ± 0.2 (-4)	6.9 ± 0.2 (-4)b	8.1 ± 0.2 (-4)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	3.6 ± 0.3 (-5)	1.50 + 0.03(-3)	1.54 ± 0.03(-3)b	1.84 ± 0.04(-3)
^{51}Cr	1.18 ± 0.02(-4)	4.2 ± 0.2 (-4)	5.4 ± 0.2 (-4)	5.6 ± 0.1 (-4)
^{54}Mn	2.31 ± 0.03(-5)	2.4 ± 0.2 (-5)	4.8 ± 0.2 (-5)b	5.5 ± 0.1 (-5)
^{56}Mn	<2(-3)	<7(-5)	a	7.2 ± 0.5 (-5)
^{59}Fe	1.85 ± 0.02(-5)	7 ± 1 (-6)	2.6 ± 0.1 (-5)	2.3 ± 0.2 (-5)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1143

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	*	*	*	*
^{58}Co	1.08 ± 0.08(-5)	1.4 ± 0.1 (-5)	2.4 ± 0.2 (-5)	3.3 ± 0.2 (-5)
^{60}Co	3.27 ± 0.07(-5)	2.9 ± 0.2 (-5)	6.2 ± 0.2 (-5)[b]	7.8 + 0.3 (-5)
^{65}Zn	3.9 ± 0.2 (-6)	1.5 ± 0.2 (-5)	1.8 ± 0.2 (-5)	2.1 + 0.3 (-5)
^{91}Sr	4.8 ± 0.9 (-5)	4.3 ± 0.1 (-4)	4.8 ± 0.2 (-4)[b]	9.1 ± 0.2 (-4)
^{91m}Y	*	*	*	*
^{93}Y	<5(-5)	1.4 ± 0.4 (-4)	a	<2(-4)
^{95}Zr	*	*	*	*
^{95}Nb	1.6 ± 0.1 (-6)	<2(-6)	a	<3(-6)
^{99}Mo	2.7 ± 0.5 (-5)	5.1 ± 0.4 (-4)	5.3 ± 0.4 (-4)	6.3 ± 0.4 (-4)
^{103}Ru	3.01 ± 0.09(-6)	<3(-6)	a	<5(-6)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	<2(-6)	<2(-5)	a	<3(-5)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1143

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	2.25 ± 0.05(-4)	1.3 ± 0.2 (-3)	1.5 ± 0.2 (-3)[b]	2.4 ± 0.1 (-3)
^{140}La	**	**	*	**
^{141}Ce	1.6 ± 0.4 (-6)	<5(-6)	a	<4(-6)
^{143}Ce	*	*	*	*
^{144}Ce	<7(-6)	<3(-5)	a	<3(-5)
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	<2(-5)	<3(-5)	a	<4(-5)
^{239}Np	<1(-4)	5.1 ± 0.3 (-3)	5.1 ± 0.3 (-3)[b]	6.49 ± 0.06(-3)

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1527

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	3.11 ± 0.04(-5)	1.10 ± 0.01(-2)	1.10 ± 0.01(-2)[b]	1.01 ± 0.01(-2)
^{132}I	*	*	*	*
^{133}I	3.6 ± 0.4 (-5)	8.11 ± 0.06(-3)	8.15 ± 0.06(-3)[b]	7.61 ± 0.08(-3)
^{134}I	*	*	*	*
^{135}I	*	*	*	*
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	8.23 ± 0.09(-5)	6.79 ± 0.09(-4)	7.61 ± 0.09(-4)[b]	8.97 ± 0.05(-4)
^{136}Cs	2.05 ± 0.05(-5)	2.10 ± 0.03(-4)	2.31 ± 0.03(-4)[b]	2.59 ± 0.03(-4)
^{137}Cs	1.11 ± 0.02(-4)	8.84 ± 0.08(-4)	9.95 ± 0.08(-4)	1.06 ± 0.01(-3)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	3.8 ± 0.6 (-5)	1.72 + 0.06(-3)	1.76 ± 0.06(-3)	1.97 ± 0.08(-3)
^{51}Cr	4.4 ± 0.2 (-5)	2.3 ± 0.2 (-4)	2.7 ± 0.2 (-4)	2.1 ± 0.2 (-4)
^{54}Mn	1.25 ± 0.03(-5)	4.55 ± 0.09(-5)	5.80 ± 0.09(-5)[b]	9.2 ± 0.3 (-5)
^{56}Mn	*	*	*	*
^{59}Fe	5.9 ± 0.6 (-6)	4 ± 1 (-6)	1.0 ± 0.2 (-5)[b]	<7(-6)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1527

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	*	*	*	*
^{58}Co	5 ± 1 (-6)	3.4 ± 0.2 (-5)	4.0 ± 0.2 (-5)[b]	8.2 ± 0.2 (-5)
^{60}Co	2.06 ± 0.05(-5)	5.6 ± 0.2 (-5)	7.7 ± 0.2 (-5)[b]	1.32 + 0.03(-4)
^{65}Zn	5 ± 1 (-6)	1.0 ± 0.2 (-5)	1.1 ± 0.6 (-5)	1.6 + 0.2 (-5)
^{91}Sr	<9(-4)	<2(-3)	a	<3(-3)
^{91m}Y	*	*	*	*
^{93}Y	6.9 ± 0.5 (-3)	8 ± 3 (-3)	1.5 ± 0.3 (-2)	1.9 ± 0.4 (-2)
^{95}Zr	<2(-6)	<3(-6)	a	<4(-6)
^{95}Nb	7 ± 2 (-7)	<3(-6)	a	<3(-6)
^{99}Mo	<2(-5)	6.5 ± 0.3 (-4)	6.5 ± 0.3 (-4)	6.1 ± 0.3 (-4)
^{103}Ru	1.6 ± 0.3 (-6)	<4(-6)	a	<4(-6)
^{106}RuD	*	*	*	*
^{110m}Ag	*	*	*	*
^{124}Sb	*	*	*	*
^{125}Sb	*	*	*	*
^{129m}Te	*	*	*	*
^{129}Te	*	*	*	*
^{131m}Te	*	*	*	*
^{131}Te	*	*	*	*
^{132}Te	<1(-6)	<4(-5)	a	<3(-5)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 4-24-82
Time: 1527

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{139}Ba	*	*	*	*
^{140}Ba	9.6 ± 0.1 (-4)	1.43 ± 0.08(-3)	2.4 ± 0.1 (-3)	2.5 ± 0.1 (-3)
^{140}La	**	**	*	**
^{141}Ce	<7(-7)	<5(-6)	a	<9(-6)
^{143}Ce	*	*	*	*
^{144}Ce	*	*	*	*
^{152}Eu	*	*	*	*
^{154}Eu	*	*	*	*
^{155}Eu	*	*	*	*
^{187}W	*	*	*	*
^{239}Np	1.37 ± 0.03(-4)	1.00 ± 0.01(-2)	1.01 ± 0.01(-2)	1.06 ± 0.04(-2)

* Radionuclide not measured.

** Parent-daughter corrected value $\leq$ 0.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10/24/82
Time: 1341

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{84}Br	*	*	a, *	<3(-3)
^{131}I	6.0 ± 0.4 (-6)	6.2 ± 0.1 (-4)	6.3 ± 0.1 (-4)[b]	1.8 ± 0.1 (-3)
^{132}I	<2(-5)	<3(-3)	a	8.5 ± 0.1 (-3)
^{133}I	6.7 ± 0.1 (-5)	7.52 ± 0.04(-3)	7.59 ± 0.04(-3)[b]	2.03 ± 0.04(-2)
^{134}I	*	*	a, *	2.13 ± 0.08(-3)
^{135}I	8.8 ± 0.2 (-5)	1.05 ± 0.01(-2)	1.06 ± 0.01(-2)[b]	2.51 ± 0.01(-2)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<5(-7)	<3(-6)	a	<4(-5)
^{136}Cs	2.8 ± 0.2 (-6)	1.6 ± 0.1 (-5)	1.9 ± 0.1 (-5)	<2(-4)
^{137}Cs	1.2 ± 0.2 (-6)	<2(-5)	a	<3(-4)
^{138}Cs	*	*	a, *	<4(-4)
^{139}Cs	*	*	*	<2(-1)
^{24}Na	2.86 ± 0.03(-4)	1.54 ± 0.02(-2)	1.57 ± 0.02(-2)[b]	4.05 ± 0.04(-2)
^{51}Cr	9.5 ± 0.2 (-5)	1.99 ± 0.02(-3)	2.08 ± 0.02(-3)[b]	5.6 ± 0.1 (-3)
^{54}Mn	2.35 ± 0.07(-5)	2.6 ± 0.2 (-5)	4.9 ± 0.2 (-5)[b]	2.0 ± 0.2 (-4)
^{56}Mn	2.0 ± 0.1 (-4)	<4(-4)	a	1.03 ± 0.09(-3)
^{59}Fe	7.1 ± 0.4 (-6)	<5(-6)	a	<2(-4)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10/24/82
Time: 1341

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{57}Co	<1(-6)	<5(-5)	a	<7(-5)
^{58}Co	9.0 ± 0.8 (-6)	9 ± 2 (-6)	1.8 ± 0.2 (-5)	<2(-4)
^{60}Co	4.21 ± 0.07(-5)	3.1 ± 0.1 (-5)	7.3 ± 0.1 (-5)b	3.5 ± 0.1 (-4)
^{65}Zn	1.12 ± 0.06(-5)	<2(-5)	a	<2(-4)
^{91}Sr	1.69 ± 0.03(-4)	1.73 ± 0.02(-3)	1.90 ± 0.02(-3)b	1.17 ± 0.01(-2)
^{91m}Y	*	*	a, *	2.1 ± 0.5 (-3)
^{93}Y	2.6 ± 0.2 (-5)	1.9 ± 0.4 (-4)	2.2 ± 0.4 (-4)	<6(-4)
^{95}Zr	<2(-6)	<6(-6)	a	<2(-4)
^{95}Nb	<1(-6)	<1(-5)	a	<7(-5)
^{99}Mo	2.8 ± 0.1 (-5)	3.07 ± 0.03(-3)	3.10 ± 0.03(-3)b	8.7 ± 0.2 (-3)
^{103}Ru	1.9 ± 0.4 (-6)	<2(-6)	a	<4(-5)
^{106}RuD	<6(-6)	<5(-5)	a	<2(-3)
^{110m}Ag	<1(-6)	<4(-6)	a	<9(-5)
^{124}Sb	<2(-6)	<7(-6)	a	<6(-5)
^{125}Sb	<1(-6)	<2(-5)	a	<3(-4)
^{129m}Te	<4(-6)	<5(-5)	a	<5(-4)
^{129}Te	<6(-3)	*	a, *	<2(-3)
^{131m}Te	<4(-6)	<2(-5)	a	<2(-4)
^{131}Te	*	*	a, *	<3(-3)

Table B.3-104a (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "A" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10/24/82
Time: 1341

Nuclide	Filter	Filtrate	Sum	Grab Sample
^{132}Te	1.4 ± 0.2 (-6)	<2(-5)	a	<2(-4)
^{139}Ba	1.9 ± 0.6 (-4)	*	a, *	2.4 ± 0.2 (-3)
^{140}Ba	7.3 ± 0.1 (-5)	2.95 ± 0.07(-4)	3.68 ± 0.07(-4)[b]	3.2 ± 0.2 (-3)
^{140}La	3.0 ± 0.1 (-5)	2.0 ± 0.3 (-5)	5.0 ± 0.3 (-5)[b]	1.1 ± 0.2 (-4)
^{141}Ce	2.3 ± 0.2 (-6)	<7(-6)	a	<4(-5)
^{143}Ce	2.1 ± 0.4 (-6)	<2(-5)	a	<5(-5)
^{144}Ce	7 ± 1 (-6)	<2(-5)	a	<3(-4)
^{152}Eu	<9(-7)	<2(-5)	a	<2(-4)
^{154}Eu	<2(-6)	<6(-6)	a	<2(-4)
^{155}Eu	<2(-6)	<5(-5)	a	<7(-4)
^{187}W	1.55 ± 0.09(-5)	<2(-5)	a	<1(-4)
^{239}Np	5.41 ± 0.06(-5)	2.00 ± 0.01(-3)	2.05 ± 0.01(-3)[b]	1.05 ± 0.01(-2)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104b
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 2010

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{84}Br	*	*	*	*
^{131}I	<4(-7)	<5(-7)	a	<7(-7)
^{132}I	*	*	*	<6(-5)
^{133}I	<5(-5)	<2(-5)	a	<1(-6)
^{134}I	*	*	*	*
^{135}I	*	*	*	<6(-6)
^{88}Rb	*	*	*	*
^{89}Rb	*	*	*	*
^{134}Cs	<3(-7)	<6(-7)	a	9.5 ± 3.8 (-7)
^{136}Cs	<4(-7)	<4(-7)	a	<7(-7)
^{137}Cs	<4(-7)	<4(-7)	a	<9(-7)
^{138}Cs	*	*	*	*
^{139}Cs	*	*	*	*
^{24}Na	*	<2(-4)	a, *	<8(-7)
^{51}Cr	<2(-6)	<2(-6)	a	<6(-6)
^{54}Mn	<4(-7)	<3(-7)	a	1.2 ± 0.5 (-6)
^{56}Mn	*	*	*	<6(-5)

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 2010

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{59}Fe	<5(-7)	<4(-7)	a	<2(-6)
^{57}Co	<2(-7)	<3(-7)	a	<4(-7)
^{58}Co	<3(-7)	<3(-7)	a	<6(-7)
^{60}Co	<1(-6)	1.6 ± 0.3 (-6)	a	8.2 ± 0.8 (-6)
^{65}Zn	<4(-7)	<5(-7)	a	<2(-6)
^{91}Sr	*	<2(-4)	a, *	<5(-6)
^{91m}Y	*	*	*	*
^{93}Y	*	*	*	<2(-5)
^{95}Zr	<5(-7)	<6(-7)	a	<2(-6)
^{95}Nb	<3(-7)	<3(-7)	a	<5(-7)
^{99}Mo	<2(-5)	<8(-6)	a	<7(-6)
^{103}Ru	<4(-7)	<3(-7)	a	<8(-7)
^{106}RuD	<2(-6)	<4(-6)	a	<6(-6)
^{110m}Ag	<2(-7)	<3(-7)	a	<6(-7)
^{124}Sb	<5(-7)	<5(-7)	a	<5(-7)
^{125}Sb	<1(-6)	<7(-7)	a	<2(-6)
^{129m}Te	<5(-6)	<4(-6)	a	<6(-6)
^{129}Te	*	*	*	*
^{131m}Te	<7(-5)	<4(-5)	a	<4(-6)
^{131}Te	*	*	*	*

Table 8.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-29-82
Time: 2010

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{132}Te	<2(-6)	<7(-7)	a	<6(-7)
^{139}Ba	*	*	*	*
^{140}Ba	<1(-6)	<3(-6)	a	<2(-6)
^{140}La	<4(-6)	<6(-6)	a	<5(-7)
^{141}Ce	<3(-7)	<7(-7)	a	<9(-7)
^{143}Ce	<1(-5)	<6(-6)	a	<2(-6)
^{144}Ce	<2(-6)	<2(-6)	a	<5(-6)
^{152}Eu	<9(-7)	<1(-6)	a	<2(-6)
^{154}Eu	<7(-7)	<5(-7)	a	<3(-6)
^{155}Eu	<6(-7)	<7(-7)	a	<3(-6)
^{187}W	<2(-4)	<5(-5)	a	<4(-6)
^{239}Np	<4(-6)	<5(-6)	a	<2(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-30-82
Time: 0830

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{84}Br	*	*	*	<6(-6)
^{131}I	<9(-8)	9 ± 1 (-7)	a	1.0 ± 0.5 (-6)
^{132}I	<6(-5)	<2(-5)	a, *	<3(-6)
^{133}I	<4(-7)	9.8 ± 0.4 (-6)	1.00 ± 0.04(-5)	1.0 ± 0.1 (-5)
^{134}I	*	*	*	1.7 ± 0.2 (-5)
^{135}I	<2(-6)	2.0 ± 0.2 (-5)	2.1 ± 0.2 (-5)	1.9 ± 0.2 (-5)
^{88}Rb	*	*	*	<3(-5)
^{89}Rb	*	*	*	<2(-5)
^{134}Cs	1.3 ± 0.6 (-7)	4 ± 2 (-7)	5 ± 2 (-7)	<2(-6)
^{136}Cs	<2(-7)	<5(-7)	a	<9(-7)
^{137}Cs	<2(-7)	5 ± 2 (-7)	a	<2(-6)
^{138}Cs	*	*	*	<1(-5)
^{139}Cs	*	*	*	<7(-5)
^{24}Na	<3(-7)	<7(-7)	a	<9(-7)
^{51}Cr	<2(-6)	<4(-6)	a	<2(-5)
^{54}Mn	7.4 ± 0.7 (-7)	7 ± 2 (-7)	1.4 ± 0.2 (-6)[b]	4 ± 1 (-6)
^{56}Mn	<2(-4)	<5(-5)	a	<8(-6)

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-30-82
Time: 0830

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{59}Fe	<2(-7)	<4(-7)	a	<2(-6)
^{57}Co	<9(-8)	<2(-7)	a	<2(-6)
^{58}Co	<2(-7)	<5(-7)	a	<2(-6)
^{60}Co	1.5 ± 0.1 (-6)	2.9 ± 0.3 (-6)	4.4 ± 0.3 (-6)[b]	1.2 ± 0.1 (-5)
^{65}Zn	<4(-7)	<5(-7)	a	<3(-6)
^{91}Sr	<2(-6)	<3(-6)	a	<5(-6)
^{91m}Y	*	*	*	<2(-6)
^{93}Y	<4(-6)	<7(-6)	a	<2(-5)
^{95}Zr	<3(-7)	<4(-7)	a	<2(-6)
^{95}Nb	<2(-7)	<3(-7)	a	<2(-6)
^{99}Mo	<9(-7)	<3(-6)	a	<7(-6)
^{103}Ru	<3(-7)	<3(-7)	a	<1(-6)
^{106}RuD	<2(-6)	<3(-6)	a	<9(-6)
^{110m}Ag	<2(-7)	<3(-7)	a	<8(-7)
^{124}Sb	<3(-7)	<5(-7)	a	<2(-6)
^{125}Sb	<5(-7)	<8(-7)	a	<3(-6)
^{129m}Te	<2(-6)	<4(-6)	a	<2(-5)
^{129}Te	*	*	*	<3(-5)
^{131m}Te	<8(-7)	<2(-6)	a	<4(-6)

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 9-30-82
Time: 0830

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{131}Te	*	*	*	<2(-5)
^{132}Te	<2(-7)	<3(-7)	a	<2(-6)
^{139}Ba	*	<4(-4)	a, *	<5(-6)
^{140}Ba	<6(-7)	<2(-6)	a	<4(-6)
^{140}La	<2(-7)	<4(-7)	a	<2(-6)
^{141}Ce	<2(-7)	<4(-7)	a	<2(-6)
^{143}Ce	<3(-7)	<5(-7)	a	<2(-6)
^{144}Ce	<5(-7)	<3(-6)	a	<7(-6)
^{152}Eu	<3(-7)	<9(-7)	a	<4(-6)
^{154}Eu	<4(-7)	<4(-7)	a	<2(-6)
^{155}Eu	<3(-7)	<2(-6)	a	<4(-6)
^{187}W	<7(-7)	<2(-6)	a	<6(-6)
^{239}Np	<3(-7)	<2(-6)	a	<4(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

b. Sum and grab values do not agree.

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-2-82
Time: 1040

Nuclide	0.45 Filter	0.45 Filtrate		0.45 Sum	Grab Sample
^{84}Br	*	*	*	*	
^{131}I	<2(-7)	3.4 ± 0.5 (-6)	3.5 ± 0.5 (-6)	3.4 ± 0.3 (-6)	
^{132}I	*	*	*	*	
^{133}I	<3(-6)	<5(-5)	a	3.4 ± 0.3 (-5)	
^{134}I	*	*	*	*	
^{135}I	*	*	*	<2(-3)	
^{88}Rb	*	*	*	*	
^{89}Rb	*	*	*	*	
^{134}Cs	<2(-7)	<8(-7)	a	1.2 ± 0.2 (-6)	
^{136}Cs	<2(-7)	<2(-6)	a	<2(-6)	
^{137}Cs	<3(-7)	<2(-6)	a	<8(-7)	
^{138}Cs	*	*	*	*	
^{139}Cs	*	*	*	*	
^{24}Na	<4(-6)	<4(-5)	a	<4(-6)	
^{51}Cr	<2(-6)	<2(-5)	a	<5(-6)	
^{54}Mn	6.6 ± 0.9 (-7)	2.2 ± 0.1 (-5)	2.3 ± 0.1 (-5)	2.26 ± 0.08(-5)	
^{56}Mn	*	*	*	*	

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-2-82
Time: 1040

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{59}Fe	<3(-7)	<2(-6)	a	<2(-6)
^{57}Co	<1(-7)	<9(-7)	a	<4(-7)
^{58}Co	<3(-7)	1.3 ± 0.2 (-5)	a	1.34 ± 0.05(-5)
^{60}Co	2.2 ± 0.2 (-6)	1.67 ± 0.03(-4)	1.69 ± 0.03(-4)	1.78 ± 0.03(-4)
^{65}Zn	<3(-7)	<5(-6)	a	3.4 ± 0.8 (-6)
^{91}Sr	<2(-4)	*	a, *	<3(-4)
^{91m}Y	*	*	*	*
^{93}Y	<4(-4)	<2(-2)	a	<4(-4)
^{95}Zr	<2(-7)	<2(-6)	a	<1(-6)
^{95}Nb	<2(-7)	<2(-6)	a	<6(-7)
^{99}Mo	<3(-6)	<3(-5)	a	<8(-6)
^{103}Ru	<2(-7)	<8(-7)	a	<8(-7)
^{106}RuD	<1(-6)	<8(-6)	a	<5(-6)
^{110m}Ag	<2(-7)	<3(-6)	a	6 ± 3 (-7)
^{124}Sb	<4(-7)	<2(-6)	a	<5(-7)
^{125}Sb	<4(-7)	<2(-6)	a	<2(-6)
^{129m}Te	<2(-6)	<2(-5)	a	<8(-6)
^{129}Te	*	*	*	*
^{131m}Te	<4(-6)	<5(-5)	a	<2(-5)

Table B.3-104b (cont'd)
UNIT NO. 2 RADIONUCLIDE CONCENTRATIONS IN REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "B" OUTLET FILTERED SAMPLES
(microcuries/gram)

Date: 10-2-82
Time: 1040

Nuclide	0.45 Filter	0.45 Filtrate	0.45 Sum	Grab Sample
^{131}Te	*	*	*	*
^{132}Te	<2(-7)	<2(-6)	a	<2(-6)
^{139}Ba	*	*	*	*
^{140}Ba	<5(-7)	<4(-6)	a	<3(-6)
^{140}La	<5(-7)	<4(-6)	a	<2(-6)
^{141}Ce	<3(-7)	<2(-6)	a	<5(-7)
^{143}Ce	<2(-6)	<2(-6)	a	<6(-6)
^{144}Ce	<6(-7)	<4(-6)	a	<3(-6)
^{152}Eu	<3(-7)	<2(-6)	a	<2(-6)
^{154}Eu	<3(-7)	<2(-6)	a	<2(-6)
^{155}Eu	<6(-7)	<3(-6)	a	<3(-6)
^{187}W	<4(-6)	<6(-5)	a	<2(-5)
^{239}Np	<2(-6)	1.3 ± 0.5 (-5)	a	2.5 ± 0.2 (-5)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.3-105a (cont'd)
PERCENT FILTERED FRACTION UNIT NO. 2 REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "A" OUTLET

Nuclide	Date and Time 10-24-82 1341
^{131}I	1.0[b]
^{133}I	0.9[b]
^{135}I	0.8[b]
^{136}Cs	15
^{24}Na	1.8[b]
^{51}Cr	4.6[b]
^{54}Mn	48[b]
^{58}Co	50
^{60}Co	58[b]
^{91}Sr	8.9[b]
^{93}Y	12
^{99}Mo	0.9[b]
^{140}Ba	20[b]
^{140}La	60[b]
^{239}Np	2.6[b]

b. Sum and grab values do not agree.

Table B.3-105a
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "A" OUTLET

Nuclide	Date and Time					
	4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{131}I	0.2[b]	0.7	0.6	0.8	0.5	2.8
^{132}I	0.4[b]	0.5[b]	0.5	*	*	*
^{133}I	0.3	0.7	0.6	0.7	0.6	0.4
^{134}I	<0.4	0.7[b]	*	*	*	*
^{135}I	0.3[b]	0.6	0.6	*	0.2	*
^{134}Cs	<10[b]	<22[b]	4.7[b]	5.1[b]	0.1[b]	11[b]
^{136}Cs	8.0[b]	<12[b]	4.8[b]	4.9	11[b]	8.9[b]
^{137}Cs	6.6	<13[b]	5.5[b]	5.8[b]	11[b]	11
^{138}Cs	*	<15[b]	*	*	*	*
^{24}Na	1.6[b]	1.6	1.7[b]	1.7	2.3[b]	2.2
^{51}Cr	1.4	3.8	8.1	0.7	22	16
^{54}Mn	59[b]	86[b]	43[b]	19[b]	48	22[b]
^{56}Mn	>8.5	>65	*	*	*	*
^{59}Fe	>66	88[b]	29	*	71	59[b]
^{58}Co	25[b]	62[b]	*	*	45[b]	12[b]
^{60}Co	37[b]	70[b]	15[b]	7.3[b]	53[b]	27
^{65}Zn	<44[b]	<54[b]	*	13[b]	22	45
^{91}Sr	19[b]	15[b]	8.5[b]	*	10[b]	*

Table B.3-105a (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP
SYSTEM FILTER DEMINERALIZER "A" OUTLET

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{91m}Y	*	*	*	*	*	*
^{93}Y	>2.8	*	*	18[b]	>26	46
^{95}Nb	*	*	*	*	*	>19
^{99}Mo	<0.6[b]	<1.9	<1.2	<0.4	5.1	<3.0
^{103}Ru	*	>57	*	*	50	>28
^{129}Te	*	<11[b]	*	*	*	*
^{139}Ba	20[b]	24[b]	*	*	*	*
^{140}Ba	41[b]	24[b]	8.1[b]	17[b]	15[b]	39
^{140}La	*	*	14[b]	17[b]	34[b]	43
^{144}Ce	*	>50	*	*	*	*
^{239}NP	1.8[b]	1.5[b]	1.3[b]	1.0[b]	<2[b]	1.4

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-105b
PERCENT FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B" OUTLET

Nuclide	Date and Time	
	9-30-82 0830	10-2-82 1040
^{131}I	*	<5.7
^{133}I	<4.0	*
^{135}I	<9.5	*
^{134}Cs	26	*
^{54}Mn	53[b]	2.9
^{60}Co	34[b]	1.3

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

Table B.3-106
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-23-82 1644	4-23-82 1843	4-23-82 2233	4-24-82 0125	4-24-82 0430	4-24-82 0850
^{84}Br	9 ± 2	1.15 ± 0.08(1)	1.3 ± 0.1 (1)	1.2 ± 0.2	c	c
^{131}I	4.7 ± 0.2	4.53 ± 0.07	4.42 ± 0.07	7.44 ± 0.06(-1)	4.09 ± 0.04	3.71 ± 0.03
^{132}I	9.0 ± 0.1	7.77 ± 0.09	7.4 ± 0.2	1.40 ± 0.01	4.88 ± 0.05	4.84 ± 0.04
^{133}I	5.4 ± 0.2	5.4 ± 0.2	4.6 ± 0.2	1.13 ± 0.03	3.73 ± 0.07	4.05 ± 0.06
^{134}I	1.13 ± 0.01(1)	1.02 ± 0.01(1)	9.3 ± 0.1	1.59 ± 0.01	4.9 ± 0.1	2.8 ± 0.7
^{135}I	7.13 ± 0.09	6.10 ± 0.07	5.7 ± 0.1	1.23 ± 0.02	3.53 ± 0.04	3.09 ± 0.04
^{89}Rb	d	1.9 ± 0.3 (1)	>6	c	c	c
^{134}Cs	4.2 ± 0.1	3.8 ± 0.1	4.5 ± 0.2	6.6 ± 0.2 (-1)	5.74 ± 0.05	6.10 ± 0.08
^{136}Cs	5.6 ± 0.2	6.0 ± 0.3	5.8 ± 0.3	8.3 ± 0.4 (-1)	5.5 ± 0.2	7.2 ± 0.2
^{137}Cs	3.9 ± 0.2	4.1 ± 0.2	4.1 ± 0.2	6.9 ± 0.2 (-1)	5.7 ± 0.1	5.73 ± 0.09
^{138}Cs	1.52 ± 0.05(1)	1.14 ± 0.03(1)	1.16 ± 0.09(1)	1.31 ± 0.07	c	c
^{139}Cs	d	d	d	d	d	d
^{24}Na	5.8 ± 0.1	6.8 ± 0.1	5.1 ± 0.1	1.33 ± 0.03	3.21 ± 0.07	2.99 ± 0.08
^{51}Cr	8.6 ± 0.1	8.94 ± 0.08	8.6 ± 0.1	2.53 ± 0.02	6.04 ± 0.06	6.8 ± 0.1
^{54}Mn	1.14 ± 0.07(1)	1.12 ± 0.06(1)	1.18 ± 0.04(1)	6.5 ± 0.1	6.3 ± 0.3	7.0 ± 0.2
^{56}Mn	1.3 ± 0.4 (1)	c	1.0 ± 0.1 (1)	4.6 ± 0.1	1.4 ± 0.3 (1)	1.1 ± 0.1 (1)
^{59}Fe	>15	>19	1.54 ± 0.07(1)	7.4 ± 0.1	c	1.1 ± 0.5 (1)
^{58}Co	8 ± 1	9.8 ± 0.8	8 ± 1	4.7 ± 0.3	c	>3
^{60}Co	9.5 ± 0.3	9.3 ± 0.3	9.8 ± 0.2	4.8 ± 0.1	5.5 ± 0.2	6.1 ± 0.2

Table 8.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time: 4-23-82 1644	4-23-82 1843	4-23-82 2233	4-24-82 0125	4-24-82 0430	4-24-82 0850
^{65}Zn	7.6 ± 0.7	1.02 ± 0.09(1)	9 ± 1	4.5 ± 0.4	6 ± 1	6 ± 1
^{91}Sr	1.19 ± 0.07(1)[b]	1.18 ± 0.09(1)	1.3 ± 0.1 (1)	1.67 ± 0.03	6.4 ± 0.2	6.8 ± 0.1
^{91m}Y	c	<10	<5	<2	2.4 ± 0.8	1.9 ± 0.5
^{93}Y	c	c	c	c	c	<8
^{95}Zr	c	c	d	4.5 ± 0.3	d	d
^{95}Nb	c	c	>13	4.8 ± 0.4	c	c
^{99}Mo	7.7 ± 0.2	8.02 ± 0.03	8.2 ± 0.3	1.90 ± 0.05	5.4 ± 0.2	7.5 ± 0.3
^{103}Ru	6 ± 3	>5	8 ± 1	4.2 ± 0.1	c	c
^{106}RuD	d	d	d	d	d	d
^{110m}Ag	2.0 ± 0.8 (1)	8 ± 2 (1)	6 ± 1	4 ± 2	5 ± 1	5 ± 1
^{124}Sb	c	c	>6	1.1 ± 0.5 (1)	c	c
^{129}Te	4.2 ± 0.8	d	>3	<5	c	c
^{132}Te	c	c	c	>6	c	c
^{139}Ba	1.40 ± 0.05(1)	1.12 ± 0.03(1)	1.5 ± 0.1 (1)	1.66 ± 0.07	5 ± 1	<7
^{140}Ba	1.06 ± 0.04	1.03 ± 0.03	1.19 ± 0.09(1)	2.11 ± 0.05	6 ± 2	7.2 ± 0.2
^{140}La	1.3 ± 0.6 (1)	1.7 ± 0.2 (1)	>14	5 ± 2	2 ± 1	4.0 ± 0.8
^{141}Ce	1.1 ± 0.4 (1)	8 ± 3	1.5 ± 0.5 (1)	5.1 ± 0.9	c	c
^{143}Ce	c	c	c	>2	c	c
^{144}Ce	d	d	d	d	d	d
^{152}Eu	d	d	d	d	d	d

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-23-82 1644	4-23-82 1843	4-23-82 2233	4-24-82 0125	4-24-82 0430	4-24-82 0850
^{187}W	c	c	c	8 ± 4	c	>9
^{239}Np	2.7 ± 0.1	3.11 ± 0.05	2.76 ± 0.03	1.53 ± 0.01	3.05 ± 0.05	3.24 ± 0.04

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-24-82 1152	4-24-82 1532	4-29-82 1500
^{84}Br	c	d	c
^{131}I	7.94 ± 0.05	5.41 ± 0.06	3.32 ± 0.07
^{132}I	1.25 ± 0.01(1)	d	8.20 ± 0.08
^{133}I	7.5 ± 0.1	5.27 ± 0.08	2.0 ± 0.8
^{134}I	3 ± 2	d	<2(-1)
^{135}I	7.5 ± 0.1	d	c
^{89}Rb	c	d	c
^{134}Cs	8.98 ± 0.08	6.50 ± 0.06	3.52 ± 0.07
^{136}Cs	1.01 ± 0.02(1)	7.6 ± 0.1	3.5 ± 0.1
^{137}Cs	9.2 ± 0.2	7.12 ± 0.08	3.53 ± 0.06
^{138}Cs	c	d	c
^{139}Cs	d	d	d
^{24}Na	6.0 ± 0.2	3.6 ± 0.2	c
^{51}Cr	1.05 ± 0.02(1)	1.3 ± 0.1 (1)	1.2 ± 0.1
^{54}Mn	1.28 ± 0.02(1)	1.71 ± 0.06(1)	5.1 ± 0.1
^{56}Mn	3.8 ± 0.3 (1)	d	c
^{59}Fe	7.8 ± 0.8	>57	1.2 ± 0.1 (1)
^{58}Co	1.7 ± 0.3 (1)	1.39 ± 0.06(1)	3.9 ± 0.6

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-24-82 1152	4-24-82 1532	4-29-82 1500
^{60}Co	1.05 ± 0.05(1)	1.39 ± 0.04(1)	4.40 ± 0.06
^{65}Zn	4.2 ± 0.6	9 ± 1	3.4 ± 0.2
^{91}Sr	1.32 ± 0.04(1)	>4	c
^{91m}Y	>3	d	c
^{93}Y	<3	8 ± 2	c
^{95}Zr	d	d	c
^{95}Nb	c	>8	c
^{99}Mo	1.1 ± 0.3 (1)	9.0 ± 0.5	<10
^{103}Ru	>3	>10	<10
^{106}RuD	d	d	d
^{110m}Ag	3.4 ± 0.5 (1)	7 ± 3 (-1)	<7(-1)
^{124}Sb	c	c	<5(-1)
^{129}Te	c	d	c
^{132}Te	c	c	c
^{139}Ba	c	d	c
^{140}Ba	1.31 ± 0.05(1)	9.0 ± 0.4	<9
^{140}La	6.2 ± 0.7	9.2 ± 0.1	2.6 ± 0.7 (-1)
^{141}Ce	c	c	<19
^{143}Ce	c	c	c
^{144}Ce	d	d	d

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-24-82 1152	4-24-82 1532	4-29-82 1500
^{152}Eu	d	d	d
^{187}W	c	c	c
^{239}Np	5.2 ± 0.7	3.8 ± 0.5	2.25 ± 0.09

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10-19-82 1223	10-24-82 1341
^{84}Br	>5(2)	>2
^{131}I	9.1 ± 0.2	1.1 ± 0.1
^{132}I	1.08 ± 0.03(2)	4.9 ± 0.1
^{133}I	3.35 ± 0.08(1)	0.90 ± 0.02
^{134}I	1.5 ± 0.1 (8)	2.19 ± 0.09(1)
^{135}I	6.0 ± 0.2 (1)	1.30 ± 0.01
^{88}Rb	c	d
^{89}Rb	>1(2)	d
^{134}Cs	>2	c
^{136}Cs	>1(1)	c
^{137}Cs	5 ± 1	c
^{138}Cs	2.1 ± 0.1 (2)	>1(1)
^{139}Cs	c	d
^{24}Na	2.1 ± 0.1 (2)	0.80 ± 0.01
^{51}Cr	1.6 ± 0.1 (2)	0.80 ± 0.01
^{54}Mn	4.4 ± 0.1	2.1 ± 0.4
^{56}Mn	>1(3)	4.9 ± 0.6
^{59}Fe	1.5 ± 0.2 (1)	c

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time: 10-19-82 1223	Date and Time: 10-24-82 1341
^{57}Co	c	c
^{58}Co	1.1 ± 0.1 (1)	c
^{60}Co	3.3 ± 0.1	1.7 ± 0.2
^{65}Zn	1.1 ± 0.1 (1)	c
^{91}Sr	>5(2)	1.50 ± 0.03
^{91m}Y	c	d
^{93}Y	c	c
^{95}Zr	c	c
^{95}Nb	c	c
^{99}Mo	7 ± 3 (2)	1.40 ± 0.05
^{103}Ru	5 ± 2	c
^{106}RuD	c	>2
^{110m}Ag	1.1 ± 0.2 (1)	c
^{124}Sb	>9(-1)	c
^{125}Sb	c	c
^{129m}Te	c	c
^{129}Te	c	c
^{131m}Te	c	c
^{131}Te	c	c
^{132}Te	c	c
^{139}Ba	>7(2)	6.9 ± 0.6

Table B.3-106 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10-19-82 1223	10-24-82 1341
^{140}Ba	1.1 ± 0.1	1.9 ± 0.2
^{140}La	d	0.8 ± 0.4
^{141}Ce	3 ± 1 (1)	c
^{143}Ce	c	c
^{144}Ce	c	c
^{152}Eu	c	c
^{154}Eu	c	c
^{155}Eu	c	c
^{187}W	c	c
^{239}Np	7.6 ± 0.7 (1)	1.70 ± 0.02

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-107
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040	10-2-82 1240	10-2-82 2030
^{84}Br	d	>7(1)	d	d	d
^{131}I	c	1.0 ± 0.5 (2)	2.4 ± 0.2 (1)	3.9 ± 0.3 (1)	4.1 ± 0.2 (1)
^{132}I	>0	>4(1)	d	d	d
^{133}I	>7(1)	8.0 ± 0.8 (1)	3.3 ± 0.3 (1)	3.3 ± 0.2 (1)	5.1 ± 0.1 (1)
^{134}I	d	2.2 ± 0.3 (2)	d	d	d
^{135}I	>3(1)	8.9 ± 0.9 (1)	c	c	d
^{89}Rb	d	>8	d	d	d
^{134}Cs	d	>1(1)	d	>1(1)	>1(2)
^{136}Cs	c	c	c	c	c
^{137}Cs	c	c	>2(1)	>1(1)	>1(1)
^{138}Cs	d	>6(1)	d	d	d
^{139}Cs	d	c	d	d	d
^{24}Na	>1(1)	>9(1)	>3(1)	>2(1)	3.7 ± 0.6 (1)
^{51}Cr	>6	>4(1)	>6(1)	>7(1)	>7(1)
^{54}Mn	5 ± 2 (2)	3.6 ± 0.9 (2)	1.58 ± 0.06(2)	1.12 ± 0.04(2)	5.4 ± 0.5 (1)
^{56}Mn	>8	>5(2)	d	d	d
^{59}Fe	c	>4(1)	>7(1)	>5(1)	>1(1)
^{58}Co	>105	>1(2)	1.14 ± 0.04(2)	8.0 ± 0.4 (1)	4.2 ± 0.3 (1)
^{60}Co	1.7 ± 0.2 (2)	3.4 ± 0.3 (2)	1.14 ± 0.02(2)	7.8 ± 0.1 (1)	3.99 ± 0.07(1)

Table B.3-107 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time				
	9-29-82 2010	9-30-82 0830	10-2-82 1040	10-2-82 1240	10-2-82 2030
^{65}Zn	>9	>5(1)	1.5 ± 0.4 (2)	>7(1)	>4(1)
^{91}Sr	>1(1)	>1(2)	>7	c	c
^{91m}Y	d	>2(1)	d	d	d
^{93}Y	c	c	c	c	c
^{95}Zr	c	c	>2(1)	c	c
^{95}Nb	c	>6(1)	>3(1)	>3(1)	c
^{99}Mo	c	>1(2)	c	>1(1)	>4(1)
^{103}Ru	c	c	>1(1)	>2(1)	c
^{106}Rud	c	c	c	c	c
^{110m}Ag	c	c	2 ± 1 (2)	1.0 ± 0.3 (1)	>4(1)
^{124}Sb	c	c	c	c	c
^{129}Te	d	c	d	d	d
^{132}Te	c	c	c	c	c
^{139}Ba	d	>3(2)	d	d	d
^{140}Ba	c	c	>2(1)	>2(1)	>1(2)
^{140}LA	>1(1)	>1(1)	c	d	d
^{141}Ce	c	c	>1(1)	>1(1)	>1(1)
^{143}Ce	c	c	c	c	c
^{144}Ce	c	c	>1(1)	>1(1)	c
^{152}Eu	>44	>1(2)	c	c	c

Table B.3-107 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040	10-2-82 1240	10-2-82 2030
^{187}W	c	c	c	c	c
^{239}Np	c	>7(1)	4.9 ± 0.4 (1)	5.0 ± 0.2 (1)	5.3 ± 0.2 (1)

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-108a
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{84}Br	d	c	d	d	d	d
^{131}I	9 ± 3	3.3 ± 0.5	5.9 ± 0.1	1.7 ± 0.1	>2.3(-1)	5.9 ± 0.1
^{132}I	4.5 ± 0.5	3.5 ± 0.2	9 ± 2	d	2.3 ± 0.7 (-1)	d
^{133}I	5.4 ± 0.2	2.8 ± 0.1	5.6 ± 0.1	1.6 ± 0.1	3.7 ± 0.2	5.3 ± 0.8
^{134}I	>2	3.2 ± 0.4[b]	d	d	d	d
^{135}I	6.7 ± 0.7	3.0 ± 0.2	5.5 ± 0.6	d	1.4 ± 0.7	d
^{88}Rb	d	d	d	d	d	d
^{89}Rb	d	d	d	d	d	d
^{134}Cs	>2[b]	c	1.09 ± 0.03(1)[b]	1.13 ± 0.02(1)[b]	7 ± 2 (2)[b]	6.5 ± 0.1[b]
^{136}Cs	6 ± 4[b]	>4[b]	1.00 ± 0.06(1)[b]	1.11 ± 0.04(1)[b]	6.5 ± 0.3[b]	7.7 ± 0.3[b]
^{137}Cs	9 ± 4[b]	c	1.03 ± 0.03(1)[b]	1.01 ± 0.02(1)[b]	6.6 ± 0.1[b]	5.7 ± 0.1[b]
^{138}Cs	d	d	d	d	d	d
^{139}Cs	d	d	d	d	d	d
^{24}Na	6.4 ± 0.2[b]	4.1 ± 0.1[b]	4.1 ± 01	4.3 ± 0.6[b]	4.5 ± 0.4[b]	4 ± 1[b]
^{51}Cr	1.0 ± 0.1 (1)[b]	8.8 ± 0.3	3.6 ± 0.3	1.22 ± 0.07(1)	2.8 ± 0.1	2 ± 1
^{54}Mn	9 ± 1	7.8 ± 0.3[b]	5 ± 2[b]	1.16 ± 0.08(1)[b]	6.3 ± 0.3[b]	3.6 ± 0.1 (1)[b]
^{56}Mn	1.6 ± 0.1 (1)[b]	7.5 ± 0.1[b]	>5[b]	d	>2(-1)[b]	d
^{59}Fe	2.1 ± 0.9 (1)[b]	8.2 ± 0.5[b]	8 ± 4	2.3 ± 0.5 (1)[b]	6.4 ± 0.3	6.6 ± 0.6 (1)[b]
^{57}Co	d	d	d	d	d	d

Table B.3-108a (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time: 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{58}Co	8 ± 2[b]	7.3 ± 0.7[b]	d	>4[b]	6 ± 2[b]	3.8 ± 0.8(1)[b]
^{60}Co	6.1 ± 0.7[b]	7.0 ± 0.4[b]	1.3 ± 0.2 (1)[b]	1.03 ± 0.05(1)[b]	5.0 ± 0.1[b]	2.14 ± 0.06(1)[b]
^{65}Zn	>1[b]	>2[b]	c	7 ± 3	3.1 ± 0.8[b]	5 ± 1[b]
^{91}Sr	7.3 ± 0.4[b]	1.02 ± 0.05 (1)[b]	1.04 ± 0.06(1)	>1[b]	1.6 ± 0.3 (1)[b]	d
^{91m}Y	d	d	d	d	d	d
^{93}Y	8 ± 3	d	c	4.6 ± 0.5[b]	c	3.2 ± 0.2 (1)[b]
^{95}Zr	d	d	d	d	d	>8
^{95}Nb	d	d	d	d	d	3.0 ± 0.9 (1)[b]
^{99}Mo	>5[b]	>3[b]	>1	>4[b]	<2	c
^{103}Ru	>1[b]	>3	d	1.3 ± 0.7 (1)	6.0 ± 0.7	2.9 ± 0.6 (1)[b]
^{106}RuD	d	7 ± 2	d	d	d	d
^{110m}Ag	d	d	d	d	d	d
^{124}Sb	d	d	d	d	d	d
^{125}Sb	d	d	d	d	d	d
^{129m}Te	d	d	d	d	d	d
^{129}Te	d	c	d	d	d	d
^{131m}Te	d	d	d	d	d	d
^{131}Te	d	d	d	d	d	d
^{132}Te	d	d	d	<7	d	d
^{139}Ba	1.5 ± 0.1(1)[b]	1.46 ± 0.03(1)[b]	d	d	d	4.8 ± 0.1
^{140}Ba	9.9 ± 0.5[b]	1.4 ± 0.1 (1)[b]	2.4 ± 0.2 (1)[b]	5.0 ± 0.1[b]	2.44 ± 0.07(1)[b]	4.36 ± 0.05[b]

Table B.3-108a (cont'd)

DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{140}La	d	d	6.1 ± 0.2[b]	5.1 ± 0.1[b]	6.1 ± 0.2[b]	>30[b]
^{141}Ce	>1[b]	<7[b]	d	d	d	d
^{143}Ce	d	d	d	d	d	d
^{144}Ce	d	1.4 ± 0.5 (1)[b]	d	d	d	d
^{152}Eu	d	>20[b]	d	d	d	d
^{154}Eu	d	d	d	d	d	d
^{155}Eu	d	d	d	d	d	d
^{187}W	d	d	d	d	d	d
^{239}Np	2.5 ± 0.9[b]	4.7 ± 0.2[b]	3.6 ± 0.1[b]	5.7 ± 0.1[b]	>5[b]	5.3 ± 0.2

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-108a (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10/24/82 1341
^{131}I	1.4 ± 0.1[b]
^{132}I	>6.2
^{133}I	1.20 ± 0.02
^{134}I	c
^{135}I	1.5 ± 0.1
^{136}Cs	<3.0(-1)
^{137}Cs	<7.0(-1)
^{24}Na	4.00 ± 0.05(-1)
^{51}Cr	8.0 ± 0.2 (-1)
^{54}Mn	2.0 ± 0.1
^{56}Mn	2.3 ± 0.1
^{59}Fe	2.2 ± 0.1
^{57}Co	d
^{58}Co	1.3 ± 0.1
^{60}Co	1.30 ± 0.02
^{65}Zn	6 ± 1 (-1)
^{91}Sr	5.0 ± 0.1 (-1)
^{93}Y	9 ± 1 (-1)

Table B.3-108a (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10/24/82 1341
^{95}Zr	d
^{95}Nb	d
^{99}Mo	1.1 ± 0.1
^{103}Ru	<1.1
^{110m}Ag	d
^{132}Te	9 ± 2 (-1)
^{139}Ba	9 ± 3 (-1)
^{140}Ba	7.0 ± 0.1 (-1)
^{140}La	2.0 ± 0.1 (-1)
^{141}Ce	<9.0(-1)
^{143}Ce	<1.4
^{144}Ce	2.6 ± 0.4
^{187}W	7.0 ± 0.3 (-1)
^{239}Np	1.70 ± 0.03

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-108b
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040
^{84}Br	d	d	d
^{131}I	d	d	d
^{132}I	d	d	d
^{133}I	d	d	>1.7
^{134}I	d	d	d
^{135}I	d	d	d
^{88}Rb	d	d	d
^{89}Rb	d	d	d
^{134}Cs	d	<7.7	d
^{136}Cs	d	d	d
^{137}Cs	>6.0	d	>4.0
^{138}Cs	d	d	d
^{139}Cs	d	d	d
^{24}Na	d	d	>5.0(-1)
^{51}Cr	>4.8	>2.6(1)	>3.8(1)
^{54}Mn	>7.7(2)	9.2 ± 0.9 (2)	7 ± 1 (2)
^{56}Mn	d	d	d
^{59}Fe	>3.7(1)	>2.8(2)	>1.8(2)

Table B.3-108b (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time: 9-29-82 2010	9-30-82 0830	10-2-82 1040
^{57}Co	>2.2	>8.9	d
^{58}Co	>6.9(-1)	>2.8(2)	>1.7(2)
^{60}Co	>4.6(2)	7.3 ± 0.5 (2)	3.2 ± 0.3 (2)
^{65}Zn	>4.0(1)	>1.0(2)	>1.2(2)
^{91}Sr	d	d	d
^{91m}Y	d	d	d
^{93}Y	d	d	d
^{95}Zr	>1.4(1)	d	>2.2(1)
^{95}Nb	>9.3	>5.1(1)	>6.1(1)
^{99}Mo	d	d	d
^{103}Ru	d	>1.4(1)	>2.7(1)
^{106}RuD	d	d	d
^{110m}Ag	d	d	>9.0
^{124}Sb	d	d	d
^{125}Sb	d	d	d
^{129m}Te	d	d	d
^{129}Te	d	d	d
^{131m}Te	d	d	d
^{131}Te	d	d	d
^{132}Te	d	>6.5	>2.5

Table B.3-108b (cont'd)
DF'S FOR FILTERED FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040
^{139}Ba	d	d	d
^{140}Ba	d	d	>6.0
^{140}La	d	d	d
^{141}Ce	d	d	>5.0
^{143}Ce	d	>2.3(1)	d
^{144}Ce	>2.3	>2.8(1)	>2.3(1)
^{152}Eu	d	d	d
^{154}Eu	d	d	d
^{155}Eu	d	d	d
^{187}W	d	d	d
^{239}Np	d	d	>6.1

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-109a

DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{84}Br	d	d	d	d	d	d
^{131}I	5.07 ± 0.07	4.21 ± 0.06	4.18 ± 0.07	3.88 ± 0.03	8.46 ± 0.06	5.24 ± 0.05
^{132}I	8.5 ± 0.1	6.5 ± 0.1	5.7 ± 0.4	d	1.30 ± 0.02(1)	d
^{133}I	5.1 ± 0.1	4.7 ± 0.1	3.65 ± 0.03	3.57 ± 0.05	8.17 ± 0.03	4.90 ± 0.07
^{134}I	1.1 ± 0.2 (1)	8.09 ± 0.09[b]	d	d	d	d
^{135}I	6.35 ± 0.07	5.25 ± 0.06	3.67 ± 0.07	d	7.7 ± 0.1	d
^{88}Rb	d	d	d	d	d	d
^{89}Rb	d	d	d	d	d	d
^{134}Cs	4.6 ± 0.1[b]	3.5 ± 0.1[b]	5.42 ± 0.08[b]	5.40 ± 0.07[b]	8.90 ± 0.08[b]	6.7 ± 0.1[b]
^{136}Cs	5.9 ± 0.3[b]	5.5 ± 0.3[b]	5.9 ± 0.1[b]	6.0 ± 0.1[b]	1.01 ± 0.02(1)[b]	7.1 ± 0.1[b]
^{137}Cs	4.9 ± 0.3[b]	4.2 ± 0.2[b]	5.88 ± 0.09[b]	5.96 ± 0.09[b]	1.00 ± 0.03(1)[b]	6.70 ± 0.08[b]
^{138}Cs	d	4.7 ± 0.6	d	d	d	d
^{139}Cs	d	d	d	d	d	d
^{24}Na	5.2 ± 0.1 [b]	4.58 ± 0.08[b]	3.48 ± 0.07	2.91 ± 0.09[b]	6.0 ± 0.1[b]	3.3 ± 0.2[b]
^{51}Cr	9.4 ± 0.3	8.26 ± 0.09	6.7 ± 0.3	6.89 ± 0.06	1.33 ± 0.07(1)	9.6 ± 0.8
^{54}Mn	1.0 ± 0.1 (1)	1.4 ± 0.1 (1)[b]	7.1 ± 0.9[b]	8.6 ± 0.4[b]	1.2 ± 0.1 (1)[b]	1.39 ± 0.03(1)[b]
^{56}Mn	c	>7[b]	>6(-1)[b]	d	>16[b]	d
^{59}Fe	>9	1.4 ± 0.2 (1)[b]	<2	>6[b]	1.4 ± 0.2 (1)	3.7 ± 0.9 (1)[b]
^{57}Co	d	d	d	d	d	d

Table B.3-109a (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time: 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{58}Co	1.1 ± 0.1 (1)[b]	1.0 ± 0.2 (1)[b]	d	>5[b]	1.6 ± 0.1 (1)[b]	1.26 ± 0.08(1)[b]
^{60}Co	1.00 ± 0.05(1)[b]	1.01 ± 0.05(1)[b]	5.6 ± 0.3[b]	8.3 ± 0.5[b]	1.19 ± 0.08(1)[b]	1.21 ± 0.05(1)[b]
^{65}Zn	8 ± 1[b]	8 ± 1[b]	>13[b]	1.2 ± 0.3 (1)	4.2 ± 0.6[b]	8 ± 2[b]
^{91}Sr	1.1 ± 0.1 (1)[b]	1.0 ± 0.1 (1)[b]	6.0 ± 0.3	>3[b]	9.5 ± 0.3[b]	d
^{91m}Y	d	>7[b]	d	d	d	d
^{93}Y	>3	d	>1	7.6 ± 0.9[b]	1.1 ± 0.5 (1)	1.1 ± 0.4 (1)[b]
^{95}Nb	d	c	d	d	d	>4[b]
^{99}Mo	9.0 ± 0.3[b]	7.4 ± 0.8[b]	7.0 ± 0.3	4 ± 1[b]	1.0 ± 0.2 (1)	7.7 ± 0.4
^{103}Ru	c	>1	d	d	c	>2[b]
^{106}RuD	d	d	d	d	d	d
^{110m}Ag	d	d	d	d	d	d
^{124}Sb	d	d	d	d	d	d
^{125}Sb	d	d	d	d	d	d
^{129m}Te	d	d	d	d	d	d
^{129}Te	d	4 ± 2[b]	d	d	d	d
^{131m}Te	d	d	d	d	d	d
^{131}Te	d	d	d	d	d	d
^{132}Te	d	d	d	d	d	d
^{139}Ba	7 ± 4	1.33 ± 0.08[b]	d	d	d	d
^{140}Ba	1.30 ± 0.07(1)[b]	1.50 ± 0.07[b]	7.1 ± 0.2[b]	7.4 ± 0.3[b]	1.4 ± 0.2[b]	8.6 ± 0.5[b]
^{140}La	d	d	6.9 ± 0.3[b]	d	1.48 ± 0.06(1)[b]	9.4 ± 0.1

Table B.3-109a (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 4-23-82 1644	4-23-82 2233	4-24-82 0430	4-24-82 0850	4-24-82 1143	4-24-82 1527
^{141}Ce	>4[b]	>4[b]	d	d	d	c
^{143}Ce	d	d	d	d	d	d
^{144}Ce	d	c	d	d	d	d
^{152}Eu	d	c	d	d	d	d
^{154}Eu	d	d	d	d	d	d
^{155}Eu	d	d	d	d	d	d
^{187}W	d	d	d	d	d	d
^{239}Np	1.6 ± 0.5[b]	3.2 ± 0.1[b]	3.3 ± 0.5[b]	2.3 ± 0.3[b]	6.9 ± 0.7[b]	4.2 ± 0.3

b. Sum and grab values do not agree.

c. Inlet and outlet values are both less-thans.

d. DF not calculated because inlet and/or outlet was not measured.

Table 8.3-109a (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT 2 REACTOR WATER
CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10-24-82 1341
^{84}Br	d
^{131}I	2.6 ± 0.1
^{132}I	>1.1(1)
^{133}I	2.30 ± 0.01
^{134}I	d
^{135}I	2.70 ± 0.02
^{88}Rb	d
^{89}Rb	d
^{134}Cs	d
^{136}Cs	<1.3
^{137}Cs	d
^{138}Cs	d
^{139}Cs	d
^{24}Na	1.70 ± 0.03
^{51}Cr	2.70 ± 0.03
^{54}Mn	5.8 ± 0.6
^{56}Mn	>3.8
^{59}Fe	d

Table B.3-109a (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT 2 REACTOR WATER
CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10-24-82 1341
^{57}Co	d
^{58}Co	3.8 ± 0.9
^{60}Co	2.6 ± 0.1
^{65}Zn	d
^{91}Sr	7.5 ± 0.1
^{91m}Y	d
^{93}Y	>2.6
^{95}Zr	d
^{95}Nb	d
^{99}Mo	3.10 ± 0.03
^{103}Ru	d
^{106}RuD	d
^{110m}Ag	d
^{124}Sb	d
^{125}Sb	d
^{129m}Te	d
^{129}Te	d
^{131m}Te	d
^{131}Te	d
^{132}Te	d

Table B.3-109a (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT 2 REACTOR WATER
CLEANUP SYSTEM FILTER DEMINERALIZER "A"

Nuclide	Date and Time 10-24-82 1341
^{139}Ba	d
^{140}Ba	1.20 ± 0.04
^{140}La	1.3 ± 0.2 (1)
^{141}Ce	d
^{143}Ce	d
^{144}Ce	d
^{152}Eu	d
^{154}Eu	d
^{155}Eu	d
^{187}W	>7.0(2)
^{239}Np	7.00 ± 0.04

d. DF not calculated because input and/or output was not measured.

Table B.3-109b
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time 9-29-82 2010	9-30-82 0830	10-2-82 1040
^{84}Br	d	d	d
^{131}I	>3.1	2.9 ± 0.3 (1)	2.4 ± 0.4 (1)
^{132}I	d	d	d
^{133}I	>1.8	5.6 ± 0.2 (1)	>2.4(-1)
^{134}I	d	d	d
^{135}I	d	8.7 ± 0.9 (1)	d
^{88}Rb	d	d	d
^{89}Rb	d	d	d
^{134}Cs	>9.7	1.2 ± 0.6 (-1)	d
^{136}Cs	d	d	d
^{137}Cs	>2.1(1)	<1.4(1)	>7.0
^{138}Cs	d	d	d
^{139}Cs	d	d	d
^{24}Na	d	>9.4(1)	>4.8
^{51}Cr	>2.8(1)	>6.0(1)	>1.3(-1)
^{54}Mn	>7.6(2)	9 ± 3 (2)	1.53 ± 0.08(2)
^{56}Mn	d	d	d
^{59}Fe	>3.7(1)	>1.3(2)	>8.8(1)

Table B.3-109b (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time		
	9-29-82 2010	9-30-82 0830	10-2-82 1040
^{57}Co	d	d	d
^{58}Co	>1.2(2)	>2.1(2)	1.1 ± 0.2 (2)
^{60}Co	5 ± 1 (2)	5.4 ± 0.6 (2)	1.11 ± 0.02(2)
^{65}Zn	>5(1)	>1.3(2)	>1.0(2)
^{91}Sr	d	>7.6(1)	d
^{91m}Y	d	d	d
^{93}Y	d	d	d
^{95}Zr	d	d	d
^{95}Nb	>5.6	d	>1.4(1)
^{99}Mo	d	d	d
^{103}Ru	d	d	>1.3(1)
^{106}RuD	d	d	d
^{110m}Ag	d	>2.0(1)	>2.3
^{124}Sb	>1.9	d	d
^{125}Sb	>4.3	d	d
^{129m}Te	d	d	d
^{129}Te	d	d	d
^{131m}Te	d	d	d
^{131}Te	d	d	d
^{132}Te	d	d	>5.0

Table B.3-109b (cont'd)
DF'S FOR FILTRATE FRACTION IN UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "B"

Nuclide	Date and Time		
	9-29-82 2010	9-30-82 0830	10-2-82 1040
^{139}Ba	d	d	d
^{140}Ba	d	d	>1.5(1)
^{140}La	d	d	>1.5(1)
^{141}Ce	>1.0	d	d
^{143}Ce	d	d	d
^{144}Ce	>2.0	>6.3	d
^{152}Eu	d	d	d
^{154}Eu	d	d	d
^{155}Eu	d	d	d
^{187}W	d	d	d
^{239}Np	>1.2	>8.2(1)	8 ± 3 (2)

d. DF not calculated because inlet and/or outlet was not measured.

Table B.3-110
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM--PLANT DATA

Nuclide	Date and Time 4-22-82 0815	4-22-82 1155	4-22-82 1604	4-22-82 2015	4-23-82 0020	4-23-82 0410	4-23-82 0835	4-23-82 1227	4-23-82 1634
^{131}I	**	8.8	8.0	6.8	6.3	9.7	5.2	4.3	5.5
^{133}I	7.7	8.0	8.4	7.3	7.8	8.3	5.6	5.2	5.1
^{134}I	9.7	10.5	9.8	9.6	10.5	10.3	8.8	6.9	9.4
^{51}Cr	18.7	12.9	10.2	9.5	10.5	11.6	8.9	7.2	8.9
^{54}Mn	**	**	**	**	**	**	**	**	4.7
^{60}Co	**	**	**	**	**	**	**	**	5.0
^{134}Cs	*	*	*	*	*	*	*	*	*
^{137}Cs	*	*	*	*	*	*	*	*	*

Nuclide	Date and Time 4-23-82 2030	4-23-82 2200	4-24-82 0043	4-24-82 0253	4-24-82 0400	4-24-82 0520	4-24-82 0600	4-24-82 0710	4-24-82 1215
^{131}I	4.8	4.4	4.7	4.4	3.9	3.7	3.6	3.5	6.4
^{133}I	5.8	5.0	4.8	3.7	3.4	3.4	**	3.3	6.1
^{134}I	9.2	8.9	8.4	50.	42.	7.2	**	**	**
^{51}Cr	9.2	9.0	8.8	5.2	5.6	6.5	4.6	7.1	*
^{54}Mn	5.1	7.0	3.4	3.3	3.3	**	10.7	4.7	5.7
^{60}Co	**	**	**	**	**	3.3	**	**	6.4
^{134}Cs	*	*	*	7.0	6.0	5.2	4.8	4.8	7.8
^{137}Cs	*	*	*	5.9	**	5.5	6.0	5.3	7.0

Table B.3-110 (cont'd)
DF'S FOR UNIT NO. 2 REACTOR WATER CLEANUP SYSTEM--PLANT DATA

Nuclide	Date and Time 4-24-82 1410	4-24-82 1620	4-24-82 2135	4-25-82 0100	4-25-82 0320	4-25-82 0455	4-25-82 0700	4-25-82 0900	4-28-82 1532
^{131}I	4.6	6.0	8.5	5.9	4.9	4.3	4.7	4.3	4.2
^{133}I	4.5	5.7	8.6	5.8	5.1	4.4	4.9	4.4	**
^{134}I	**	**	12.5	**	15.4	**	11.5	5.6	**
^{51}Cr	*	*	*	*	*	**	**	**	1.3
^{54}Mn	**	**	2.1	5.3	6.2	0.9	6.8	4.2	3.4
^{60}Co	**	**	5.0	5.2	5.1	1.3	6.2	2.4	4.1
^{134}Cs	5.0	7.5	8.2	5.9	4.8	4.3	4.9	4.4	5.0
^{137}Cs	5.6	7.1	8.9	6.1	5.1	**	**	4.3	5.4

Nuclide	Date and Time 4-28-82 1735	4-28-82 1932	4-28-82 2125	4-29-82 0126	4-29-82 0327	4-29-82 0734	4-29-82 0932	4-29-82 1130	4-29-82 1333
^{131}I	4.3	4.5	3.6	3.4	3.5	3.2	1.4	3.5	3.7
^{133}I	**	**	**	**	**	**	**	**	**
^{134}I	**	**	**	**	**	**	**	**	**
^{51}Cr	2.1	2.1	1.2	1.8	**	**	**	**	**
^{54}Mn	9.0	6.2	4.6	5.5	5.4	3.9	1.4	4.2	4.1
^{60}Co	9.1	5.6	**	4.6	4.5	4.1	1.6	3.3	4.3
^{134}Cs	7.3	4.8	5.3	5.0	3.6	3.7	2.9	3.7	4.1
^{137}Cs	7.4	4.9	4.5	4.2	4.4	4.2	3.7	3.3	4.3

* No data reported.

** Less than minimum detectable activity for one or both values with no limit value reported.

Table B.3-111
UNIT NO. 1 REACTOR COOLANT IODINE CONCENTRATIONS (PLANT DATA)
(microcuries/gram)

Date	Time	Percent Power	^{131}I	^{132}I	^{133}I	^{134}I	^{135}I
10/1/82	1401	0.0	**	**	**	5.85(E-8)	**
10/5	0914	0.0	**	**	**	**	**
10/8	0901	0.0	9.69(E-7)	**	1.61(E-6)	3.90(E-6)	**
10/9	2240		**	**	**	**	**
10/10	1620		2.15(E-7)	**	4.51(E-6)	1.34(E-5)	7.22(E-6)
10/12	0900	0.0	**	**	**	**	**
10/15	0900	0.0	1.62(E-7)	1.74(E-6)	7.25(E-7)	**	**
10/17	0905		2.89(E-7)	1.30(E-6)	**	**	**
10/19	0935	59.0	6.49(E-6)	9.02(E-5)	1.11(E-4)	4.96(E-4)	2.42(E-4)
10/22	0215		6.52(E-6)	1.50(E-4)	6.71(E-5)	7.59(E-5)	9.75(E-5)
10/22	0845	0.0	5.07(E-6)	1.76(E-4)	4.04(E-5)	**	3.05(E-5)
10/26	0416		1.99(E-5)	9.65(E-5)	1.90(E-4)	1.44(E-3)	2.83(E-4)
10/26	1040	60.0	1.99(E-5)	9.65(E-5)	1.90(E-4)	1.44(E-3)	2.83(E-4)
10/28	0003		**	1.73(E-4)	5.94(E-5)	8.54(E-3)	**
10/28	1825		1.28(E-5)	2.30(E-4)	1.81(E-4)	8.73(E-4)	3.90(E-4)
10/29	0930	76.0	1.26(E-5)	2.71(E-4)	1.73(E-4)	8.98(E-4)	3.96(E-4)
10/30	0910		1.22(E-5)	2.73(E-4)	1.70(E-4)	6.40(E-4)	3.68(E-4)
10/31	0041		1.30(E-5)	2.16(E-4)	1.42(E-4)	3.56(E-4)	3.14(E-4)
10/31	1613		7.96(E-6)	1.74(E-4)	1.01(E-4)	3.68(E-4)	2.09(E-4)
11/1	1020		1.19(E-5)	3.07(E-4)	1.36(E-4)	5.85(E-4)	3.02(E-4)
11/2	0915	76.0	9.22(E-6)	2.94(E-4)	1.30(E-4)	1.16(E-3)	3.04(E-4)
11/2	1600		9.26(E-6)	2.66(E-4)	1.30(E-4)	5.27(E-4)	2.73(E-4)
11/3	0015		2.32(E-5)	3.33(E-4)	1.46(E-4)	9.12(E-4)	3.45(E-4)
11/4	1550		1.27(E-5)	2.70(E-4)	1.69(E-4)	3.07(E-4)	3.67(E-4)
11/5	0850	74.0	1.13(E-5)	3.02(E-4)	1.30(E-4)	5.39(E-4)	2.86(E-4)

Table B.3-111 (cont'd)
UNIT NO. 1 REACTOR COOLANT IODINE CONCENTRATIONS (PLANT DATA)
(microcuries/gram)

Date	Time	Percent Power	^{131}I	^{132}I	^{133}I	^{134}I	^{135}I
11/7	1727		1.17(E-5)	4.13(E-4)	1.66(E-4)	7.70(E-4)	3.69(E-4)
11/9	0820	72.7	1.16(E-5)	3.18(E-4)	1.41(E-4)	5.23(E-4)	3.15(E-4)
11/11/82	0825	72.0	1.27(E-5)	3.71(E-4)	1.51(E-4)	5.91(E-4)	9.49(E-5)
11/16	0940	71.0	1.19(E-5)	4.41(E-4)	1.69(E-4)	8.46(E-4)	3.74(E-4)
11/18	0950	61.0	1.41(E-5)	4.56(E-4)	1.66(E-4)	7.28(E-4)	3.50(E-4)
11/23	0900	69.6	1.14(E-5)	3.69(E-4)	1.46(E-4)	6.96(E-4)	3.27(E-4)
11/24	0835	69.2	1.28(E-5)	4.18(E-4)	1.69(E-4)	7.87(E-4)	3.78(E-4)
11/30	0940	67.5	1.38(E-5)	3.77(E-4)	1.67(E-4)	6.59(E-4)	1.02(E-4)
12/1	0953	67.0	1.06(E-5)	3.12(E-4)	1.29(E-4)	5.58(E-4)	2.99(E-4)
12/2	0925	66.6	1.40(E-5)	4.19(E-4)	1.84(E-4)	7.37(E-4)	4.00(E-4)
12/3	0005		1.43(E-5)	3.94(E-4)	1.68(E-4)	7.03(E-4)	3.53(E-4)
12/3	1245		1.14(E-5)	3.14(E-4)	1.26(E-4)	4.92(E-4)	2.70(E-4)
12/3	1600		1.23(E-5)	4.06(E-4)	1.65(E-4)	6.51(E-4)	3.56(E-4)
12/7	0853	65.0	1.62(E-5)	3.58(E-4)	1.60(E-4)	6.09(E-4)	3.37(E-4)
12/9	0915	64.7	7.06(E-5)	7.01(E-3)	8.07(E-4)	3.44(E-3)	1.76(E-3)
12/11	1710		6.15(E-6)	2.05(E-4)	3.33(E-5)	8.98(E-6)	3.30(E-5)
12/13	0855	0.0	1.49(E-6)	8.25(E-5)	4.75(E-7)	**	**
12/16	0830	0.0	4.27(E-7)	1.82(E-5)	<3.24(E-7)	<9.09(E-7)	5.28(E-7)
12/21	0815	0.0	**	3.56(E-6)	**	**	**
12/23	0820	0.0	<1.15(E-7)	2.55(E-6)	<1.51(E-7)	<4.83(E-7)	<7.68(E-7)
12/28	0830	0.0	**	2.18(E-6)	**	**	**
12/30	0810	0.0	<6.60(E-8)	3.22(E-7)	<7.69(E-7)	<3.05(E-7)	<2.20(E-7)

** Not reported by plant.

Table B.3-112
UNIT NO. 2 REACTOR COOLANT IODINE CONCENTRATIONS (PLANT DATA)
(microcuries/gram)

Date	Time	Percent Power	^{131}I	^{132}I	^{133}I	^{134}I	^{135}I
9/3/82	0930	0.0	**	**	**	**	**
9/7	1015	0.0	**	**	**	**	**
9/10	0905	0.0	**	**	**	**	**
9/14	1700	0.0	**	**	**	**	**
9/17	0840	0.0	**	**	**	**	**
9/21	0830	0.0	**	**	**	**	**
9/24	0900	0.0	**	**	**	**	**
9/28	0956	0.0	**	**	**	**	**
9/29	1520		**	**	**	**	**
9/30	2020		7.52(E-5)	4.35(E-4)	1.48(E-3)	7.89(E-3)	2.50(E-3)
10/1	0930	0.0	4.01(E-5)	2.99(E-4)	4.48(E-4)	**	3.17(E-4)
10/2	0130		3.59(E-5)	2.16(E-4)	2.06(E-4)	8.12(E-6)	5.58(E-5)
10/4	0935	33.0	5.48(E-4)	6.67(E-3)	1.13(E-2)	7.08(E-2)	2.56(E-2)
10/8	0955	57.4	1.11(E-3)	2.01(E-2)	1.79(E-2)	9.55(E-2)	3.94(E-2)
10/10	2045		1.10(E-3)	2.49(E-2)	1.56(E-2)	4.92(E-2)	2.94(E-2)
10/10	2235		1.30(E-3)	3.24(E-2)	1.60(E-2)	2.07(E-2)	2.40(E-2)
10/11	0405		1.00(E-3)	2.69(E-2)	9.26(E-3)	**	9.21(E-3)
10/12	0825	0.0	3.83(E-4)	1.08(E-2)	5.35(E-4)	**	**
10/12	1315		2.41(E-4)	9.11(E-3)	4.52(E-4)	**	**
10/15	0830	0.0	1.01(E-4)	5.58(E-3)	**	**	**
10/19	0950	70.8	1.04(E-3)	1.08(E-2)	1.57(E-2)	1.25(E-1)	3.68(E-2)
10/23	0735	79.5	1.01(E-3)	8.63(E-3)	1.29(E-2)	9.67(E-3)	2.30(E-2)
10/24	0845		1.24(E-3)	7.54(E-3)	1.60(E-2)	2.58(E-2)	2.54(E-2)
10/26	0910	77.0	1.48(E-3)	2.73(E-2)	2.46(E-2)	1.19(E-1)	4.51(E-2)

Table B.3-112 (cont'd)
UNIT NO. 2 REACTOR COOLANT IODINE CONCENTRATIONS (PLANT DATA)
(microcuries/gram)

Date	Time	Percent Power	^{131}I	^{132}I	^{133}I	^{134}I	^{135}I
10/28	0016		2.17(E-3)	4.02(E-2)	2.22(E-2)	8.42(E-2)	4.41(E-2)
10/29	0815	0.0	4.98(E-4)	1.22(E-2)	1.78(E-3)	**	**
11/3	0855	0.0	7.16(E-6)	1.91(E-3)	0.0	0.0	0.0
11/5/82	1015	0.0	4.28(E-6)	1.23(E-3)	**	**	**
11/9	0830	0.0	5.94(E-6)	1.19(E-3)	**	**	**
11/11	0920	0.0	1.76(E-6)	3.79(E-4)	**	**	**
11/16	0900	0.0	6.65(E-7)	1.24(E-4)	**	**	**
11/18	0915	0.0	7.67(E-7)	1.42(E-4)	**	**	**
11/23	0835	0.0	3.48(E-7)	7.26(E-5)	**	**	**
11/26	0825	0.0	**	3.24(E-5)	**	**	**
11/30	0850	0.0	**	1.75(E-5)	**	**	**
12/2	0825	0.0	1.40(E-7)	9.73(E-6)	<8.75(E-8)	<7.04(E-7)	<2.88(E-7)
12/4	0938		**	**	**	**	**
12/7	0400		1.17(E-3)	1.34(E-2)	1.99(E-2)	1.37(E-1)	4.48(E-2)
12/7	0900	72.0	1.17(E-3)	1.34(E-2)	1.99(E-2)	1.37(E-1)	4.48(E-2)
12/8	0900	79.5	1.03(E-3)	1.42(E-2)	2.09(E-2)	1.21(E-1)	4.63(E-2)
12/9	0855	91.5	1.34(E-3)	2.29(E-2)	2.37(E-2)	1.20(E-1)	5.16(E-2)
12/10	0115		1.38(E-3)	2.65(E-2)	2.06(E-2)	9.57(E-2)	4.18(E-2)
12/10	0915	71.0	1.38(E-3)	2.65(E-2)	2.06(E-2)	9.57(E-2)	4.18(E-2)
12/11	1015	90.8	1.44(E-3)	1.46(E-2)	2.03(E-2)	1.84(E-2)	3.87(E-2)
12/12	0915	100.0	1.39(E-3)	3.49(E-2)	2.39(E-2)	1.47(E-1)	5.61(E-2)
12/14	0845	98.8	1.29(E-3)	3.89(E-2)	2.48(E-2)	1.48(E-1)	4.88(E-2)
12/16	0900	100.0	1.95(E-3)	2.46(E-2)	2.52(E-2)	6.38(E-2)	4.82(E-2)
12/16	1300		1.81(E-3)	4.15(E-2)	2.81(E-2)	1.20(E-1)	6.29(E-2)

Table 8.3-112 (cont'd)
UNIT NO. 2 REACTOR COOLANT IODINE CONCENTRATIONS (PLANT DATA)
(microcuries/gram)

Date	Time	Percent Power	^{131}I	^{132}I	^{133}I	^{134}I	^{135}I
12/17	0900		1.99(E-3)	3.83(E-2)	2.39(E-2)	1.60(E-1)	5.39(E-2)
12/18	0553		1.69(E-3)	4.21(E-2)	2.59(E-2)	1.42(E-1)	5.20(E-2)
12/18	0900	99.4	1.47(E-3)	4.54(E-2)	2.57(E-2)	1.49(E-1)	5.58(E-2)
12/19/82	0925	99.7	1.46(E-3)	4.25(E-2)	2.53(E-2)	1.47(E-1)	5.34(E-2)
12/20	0909	99.3	1.76(E-3)	3.99(E-2)	2.08(E-2)	1.45(E-1)	5.13(E-2)
12/21	0849	99.3	2.42(E-3)	4.77(E-2)	3.59(E-2)	1.30(E-1)	7.43(E-2)
12/22	0900	100.0	2.86(E-3)	5.65(E-2)	4.22(E-2)	1.71(E-1)	8.68(E-2)
12/22	1414		5.47(E-3)	6.10(E-2)	4.44(E-2)	6.76(E-2)	7.07(E-2)
12/23	1758		3.05(E-3)	3.23(E-2)	9.93(E-3)	**	**
12/24	0150		1.81(E-3)	3.46(E-2)	5.48(E-3)	2.15(E-2)	6.87(E-3)
12/24	0855		1.28(E-3)	3.19(E-2)	1.04(E-2)	7.23(E-2)	2.10(E-2)
12/27	1608		1.41(E-3)	3.28(E-2)	2.28(E-2)	1.02(E-1)	4.74(E-2)
12/28	0830	86.3	1.30(E-3)	3.29(E-2)	2.06(E-2)	1.28(E-1)	4.62(E-2)
12/30	0915	100.0	1.51(E-3)	3.30(E-2)	2.30(E-2)	1.07(E-1)	5.28(E-2)
1/1/83	0401		3.74(E-3)	4.14(E-2)	4.60(E-2)	4.96(E-2)	8.35(E-2)
1/3	0334		1.38(E-3)	4.56(E-2)	2.91(E-2)	1.23(E-1)	5.27(E-2)
1/3	0502		2.42(E-3)	4.75(E-2)	2.25(E-2)	4.57(E-2)	4.07(E-2)
1/3	0955	0.0	1.34(E-3)	4.22(E-2)	6.60(E-3)	<5.77(E-3)	<2.04(E-3)
1/4	0126		1.04(E-3)	3.69(E-2)	2.31(E-3)	4.02(E-3)	1.21(E-3)
1/4	0830	29.0	9.38(E-4)	4.04(E-2)	5.34(E-3)	3.47(E-2)	1.16(E-2)
1/5	1430		1.29(E-3)	3.54(E-2)	1.92(E-2)	9.51(E-2)	3.94(E-2)
1/6	0900	77.5	1.71(E-3)	2.92(E-2)	2.06(E-2)	2.17(E-1)	4.82(E-2)
1/7	0900	80.0	1.30(E-3)	3.09(E-2)	1.97(E-2)	1.08(E-1)	4.57(E-2)
1/7	1330		1.84(E-3)	3.57(E-2)	2.22(E-2)	9.50(E-2)	4.26(E-2)

Table B.3-112 (cont'd)
UNIT NO. 2 REACTOR COOLANT IODINE CONCENTRATIONS (PLANT DATA)
(microcuries/gram)

Date	Time	Percent Power	^{131}I	^{132}I	^{133}I	^{134}I	^{135}I
1/9	0749	74.0	1.42(E-3)	3.12(E-2)	1.88(E-2)	1.10(E-1)	4.15(E-2)
1/11	1215	83.0	2.28(E-3)	4.02(E-2)	2.95(E-2)	1.49(E-1)	5.96(E-2)
1/12	0003		2.12(E-3)	4.27(E-2)	2.83(E-2)	1.21(E-1)	5.93(E-2)
1/12/83	0800		2.04(E-3)	3.73(E-2)	2.72(E-2)	2.10(E-1)	5.96(E-2)
1/13	0810	100.0	4.69(E-3)	5.70(E-2)	4.78(E-2)	1.88(E-1)	9.46(E-2)
1/14	0800	98.4	5.53(E-3)	6.10(E-2)	7.03(E-2)	1.95(E-1)	1.03(E-1)
1/15	0400		6.56(E-3)	5.67(E-2)	6.67(E-2)	1.40(E-1)	1.07(E-1)
1/15	0800	80.0	4.34(E-3)	6.49(E-2)	6.65(E-2)	1.65(E-1)	1.08(E-1)
1/18	0915	80.0	2.09(E-3)	3.36(E-2)	1.71(E-2)	3.05(E-1)	3.69(E-2)
1/18	1930		1.81(E-3)	3.46(E-2)	1.88(E-2)	1.09(E-1)	4.06(E-2)
1/20	1610	80.0	1.39(E-3)	3.61(E-2)	2.09(E-2)	8.33(E-2)	4.74(E-2)
1/21	1055	80.0	1.34(E-3)	3.33(E-2)	1.94(E-2)	1.07(E-1)	4.23(E-2)
1/22	0830	80.0	1.48(E-3)	3.45(E-2)	2.16(E-2)	1.10(E-1)	4.20(E-2)
1/23	0825	80.0	1.87(E-3)	3.58(E-2)	1.92(E-2)	1.16(E-1)	5.98(E-2)
1/23	1543		1.48(E-3)	3.23(E-2)	1.88(E-2)	1.09(E-1)	4.02(E-2)
1/25	0850	79.8	1.36(E-3)	3.88(E-2)	1.95(E-2)	1.29(E-1)	4.29(E-2)
1/27	0800	80.0	1.41(E-3)	3.69(E-2)	1.75(E-2)	1.24(E-1)	4.2 (E-2)
1/29	0040		2.34(E-3)	4.29(E-2)	2.91(E-2)	9.74(E-2)	5.96(E-2)

** Not reported by plant.

Table B.3-113
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

Unit No. 1			Unit No. 2		
Date	Time	μCi/g	Date	Time	μCi/g
3-12-82	1025	6.6(-6)	3-14-82	0025	2.5(-2)
3-16	0905	8.2(-6)		2015	2.3(-1)
3-19	0835	8.0(-6)		2343	7.3(-2)
3-20	0755	7.4(-6)	3-15	0245	1.6(-2)
3-24	0037	9.7(-6)		0445	4.5(-2)
	0922	1.2(-5)	3-16	0845	2.2(-3)
	1450	9.0(-6)	3-19	0910	2.8(-3)
3-26	0800	7.8(-6)	3-21	0021	1.7(-3)
3-30	0855	7.2(-6)	3-23	0049	2.0(-3)
			3-24	2033	3.0(-3)
4-2	0925	7.9(-6)		2118	3.5(-3)
4-5	0920	6.9(-6)	3-25	0133	1.9(-3)
4-9	0900	1.3(-5)		0930	1.9(-3)
4-13	0915	8.0(-6)	3-29	0003	1.5(-3)
4-27	1010	4.8(-6)		0710	1.6(-3)
			3-30	0907	2.0(-3)
5-3	0907	6.1(-6)			
5-11	0905	6.9(-6)	4-1	0805	1.7(-3)
5-17	0930	6.1(-6)	4-2	0915	2.6(-3)
5-19	0910	1.3(-5)	4-6	0935	2.9(-3)
5-21	0915	5.8(-6)	4-7	1000	3.3(-3)

Table B.3-113 (cont'd)
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

Unit No. 1			Unit No. 2		
Date	Time	µCi/g	Date	Time	µCi/g
5-25-82	0910	7.7(-6)	4-9-82	0845	2.6(-3)
5-28	1011	7.5(-6)	4-10	0454	3.3(-3)
			4-12	0930	3.0(-3)
6-1	0920	9.2(-6)	4-16	0910	3.1(-3)
6-4	0824	1.9(-6)	4-20	0900	3.0(-3)
6-8	0935	4.5(-6)	4-27	0941	4.4(-3)
6-11	1000	5.9(-6)	4-30	0900	4.5(-3)
6-14	0850	6.8(-6)			
6-18	0950	1.0(-5)	5-4	0810	1.6(-4)
6-22	0915	2.2(-5)	5-7	0800	1.7(-4)
6-25	0800	2.4(-5	5-10	0830	2.4(-4)
6-29	0937	1.2(-5)	5-11	0921	2.5(-4)
			5-12	0707	2.7(-4)
7-2	0800	1.5(-5)	5-13	0719	1.6(-4)
7-6	0800	9.5(-6)	5-14	0758	4.1(-4)
7-9	0935	1.6(-5)	5-17	0815	7.4(-4)
7-12	0915	1.2(-5)	5-18	0815	3.4(-4)
7-16	0930	1.1(-5)	5-20	1255	5.6(-4)
7-20	0835	9.8(-7)	5-21	0830	6.3(-4)
7-23	0840	2.1(-7)	5-24	0745	4.1(-4)
			5-25	0900	3.8(-4)

Table B.3-113 (cont'd)
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

Unit No. 1			Unit No. 2		
Date	Time	µCi/g	Date	Time	µCi/g
			5-26-82	0730	3.9(-4)
			5-27	0825	5.6(-4)
			5-28	0820	1.6(-4)
			6-1	0745	3.8(-5)
			6-2	0745	4.0(-5)
			6-4	1000	2.3(-5)
			6-6	1020	1.6(-5)
			6-7	0810	6.6(-5)
			6-8	0810	1.7(-5)
			6-9	0850	1.1(-5)
			6-10	0745	1.1(-5)
			6-13	1003	1.5(-5)
			6-18	0800	3.9(-6)
			6-22	0900	7.4(-6)
			6-25	0815	2.2(-6)
			6-29	0800	3.0(-6)
			7-2	0800	1.3(-6)
			7-6	0900	7.8(-7)
			7-9	0850	1.1(-6)
			7-12	0923	4.9(-7)
			7-16	0900	3.3(-7)

Table B.3-114
UNIT NO. 1 IODINE SPECIES IN REACTOR WATER CLEANUP SYSTEM INLET
(microcuries/gram)

Date	Isotope	I^- Plus Other	IO_3^-	Aqueous	Total
5-11-82 0916	^{131}I	6.7 ± 0.7 (-6)	8.1 ± 0.7 (-6)	<5(-6)	1.7 ± 0.3 (-5)
	^{133}I	7.3 ± 0.1 (-5)	8.8 ± 0.2 (-5)	<5(-6)	1.64 ± 0.03(-4)
	^{135}I	1.2 ± 0.5 (-4)	1.90 ± 0.06(-4)	<6(-5)	3.4 ± 0.3 (-4)
6-1-82 0907	^{131}I	<5(-6)	2.8 ± 0.4 (-6)	4.4 ± 0.6 (-6)	≥ 9.9(-6), <1.3(-5)
	^{133}I	5.1 ± 0.1 (-5)	3.8 ± 0.1 (-5)	1.0 ± 0.5 (-4)	1.9 ± 0.5 (-4)
	^{135}I	<2(-4)	8 ± 1 (-5)	<9(-5)	≥ 1.6(-4), <3.2(-4)

b. No total computed because of less-than values.

Table B.3-115
UNIT NO. 1 IODINE SPECIES IN REACTOR WATER CLEANUP SYSTEM "B" OUTLET
(microcuries/gram)

Date	Isotope	I^- Plus Other	IO_3^-	Aqueous	Total
5-11-82 0918	^{131}I	<5(-7)	<2(-7)	<5(-7)	b
	^{133}I	5.5 ± 0.2 (-6)	1.3 ± 0.2 (-6)	1.7 ± 0.5 (-6)	8.5 ± 0.6 (-6)
	^{135}I	<1(-5)	<5(-6)	<2(-5)	b
6-1-82 0910	^{131}I	<8(-7)	<2(-7)	<1(-6)	b
	^{133}I	9.5 ± 0.3 (-6)	6 ± 2 (-7)	7.3 ± 0.9 (-6)	1.7 ± 0.1 (-5)
	^{135}I	1.8 ± 0.2 (-6)	<8(-6)	<9(-5)	b

b. No total computed because of less-than values.

Table B.3-116
UNIT NO. 1 PERCENT IODINE SPECIES IN REACTOR WATER CLEANUP SYSTEM

Filter Demineralizer Inlet

Date	Time	I^- + Other	IO_3^-	Aqueous
5-11-82	0916	39	48.53	8
6-10-82	0907	27	20	53

Filter Demineralizer "B" Outlet

Date	Time	I^- + Other	IO_3^-	Aqueous
5-11-82	0918	65	15	20
6-10-82	0910	55	43	42

Table B.3-117
UNIT NO. 2 IODINE SPECIES IN REACTOR COOLANT
(microcuries/gram)

Date	Isotope	I^- Plus Other	IO_3^-	Aqueous	Total
4-11-82 1003	^{131}I	1.25 ± 0.02(-3)	4.98 ± 0.05(-4)	1.4 ± 0.4 (-4)	1.89 ± 0.04(-3)
	^{132}I	2.85 ± 0.02(-2)	1.08 ± 0.01(-2)	2.42 ± 0.04(-3)	4.17 ± 0.03(-2)
	^{133}I	1.64 ± 0.04(-2)	6.45 ± 0.01(-2)	1.3 ± 0.1 (-3)	8.22 ± 0.04(-2)
	^{135}I	3.53 ± 0.02(-2)	1.35 ± 0.01(-2)	2.90 ± 0.04(-3)	5.17 ± 0.02(-2)
4-23-82 1840	^{131}I	1.74 ± 0.02(-3)	5.4 ± 0.2 (-4)	1.3 ± 0.1 (-4)	2.41 ± 0.03(-3)
	^{133}I	2.17 ± 0.02(-2)	6.7 ± 0.2 (-3)	2.2 ± 0.1 (-3)	3.06 ± 0.03(-3)
	^{135}I	4.5 ± 0.2 (-2)	1.3 ± 0.1 (-2)	7 ± 2 (-3)	6.5 ± 0.3 (-2)
4-24-82 0430	^{131}I	1.33 ± 0.07(-2)	2.49 ± 0.02(-2)	2.8 ± 0.1 (-3)	4.11 ± 0.02(-2)
	^{133}I	1.75 ± 0.09(-2)	3.27 ± 0.04(-2)	3.55 ± 0.07(-3)	5.37 ± 0.04(-2)
	^{135}I	1.31 ± 0.03(-2)	2.46 ± 0.06(-2)	2.1 ± 0.7 (-3)	4.0 ± 0.1 (-2)
4-24-82 0850	^{131}I	1.18 ± 0.09(-2)	3.61 ± 0.02(-2)	2.97 ± 0.09(-3)	5.09 ± 0.02(-2)
	^{133}I	1.18 ± 0.2 (-2)	3.67 ± 0.04(-2)	2.9 ± 0.1 (-3)	5.14 ± 0.05(-2)
4-24-82 1154	^{131}I	1.65 ± 0.01(-2)	4.09 ± 0.02(-2)	1.61 ± 0.05(-3)	5.90 ± 0.02(-2)
	^{133}I	1.33 ± 0.01(-2)	3.25 ± 0.04(-2)	1.30 ± 0.03(-3)	4.71 ± 0.04(-2)
	^{135}I	4.9 ± 0.2 (-3)	1.16 ± 0.03(-2)	<7(-3)	b
4-24-82 1534	^{131}I	1.57 ± 0.01(-2)	3.43 ± 0.01(-2)	2.21 ± 0.05(-3)	5.22 ± 0.01(-2)
	^{133}I	1.1 ± 0.2 (-2)	2.38 ± 0.03(-2)	1.62 ± 0.04(-3)	3.64 ± 0.04(-2)
	^{135}I	<7(-3)	6.2 ± 0.7 (-3)	<9(-3)	b

b. No total computed because of less-than values.

Table B.3-118
UNIT NO. 2 IODINE SPECIES IN REACTOR WATER CLEANUP SYSTEM FILTER DEMINERALIZER "A" OUTLET
(microcuries/gram)

Date	Isotope	I^- Plus Other	IO_3^-	Aqueous	Total
4-24-82 0430	^{131}I	2.27 ± 0.03(-3)	7.30 ± 0.08(-3)	7.5 ± 0.2 (-4)	1.03 ± 0.01(-2)
	^{133}I	3.31 ± 0.04(-3)	1.10 ± 0.01(-2)	1.06 ± 0.02(-3)	1.54 ± 0.01(-2)
	^{135}I	2.3 ± 0.2 (-3)	8.4 ± 0.3 (-3)	9 ± 4 (-4)	1.16 ± 0.05(-2)
4-24-82 0850	^{131}I	2.41 ± 0.01(-3)	9.9 ± 0.1 (-3)	1.13 ± 0.02(-3)	1.34 ± 0.01(-2)
	^{133}I	2.68 ± 0.02(-3)	1.05 ± 0.01(-2)	1.22 ± 0.03(-3)	1.44 ± 0.01(-2)
	^{135}I	1.5 ± 0.1 (-3)	5.6 ± 0.2 (-3)	8 ± 3 (-4)	7.9 ± 0.4 (-3)
4-24-82 1157	^{131}I	1.62 ± 0.02(-3)	5.19 ± 0.04(-3)	4.57 ± 0.09(-4)	7.27 ± 0.05(-3)
	^{133}I	1.41 ± 0.04(-3)	4.64 ± 0.07(-3)	3.9 ± 0.3 (-4)	6.44 ± 0.09(-3)
	^{135}I	<2(-3)	1.6 ± 0.4 (-3)	<2(-3)	b
4-24-82 1529	^{131}I	1.95 ± 0.02(-3)	8.91 ± 0.06(-3)	1.8 ± 0.1 (-4)	1.10 ± 0.01(-2)
	^{133}I	1.40 ± 0.05(-3)	6.7 ± 0.1 (-3)	9 ± 3 (-5)	8.2 ± 0.1 (-3)

b. No total computed because of less-than values.

Table B.3-119
MONTHLY BETA EMITTER RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT (PLANT DATA)
(microcuries/gram)

	Unit 1			Unit 2		
Date	^{3}H	^{89}Sr	^{90}Sr	^{3}H	^{89}Sr	^{90}Sr
1/79	7.5(-4)	7.8(-6)	1.7(-7)	8.8(-4)	6.5(-6)	3.2(-7)
2/79	5.3(-4)	2.4(-6)	<7 (-8)	7.1(-4)	6.7(-6)	<8 (-8)
3/79	4.1(-4)	4.5(-7)	<6 (-8)	6.8(-4)	<1(-7)	<7 (-8)
4/79	1.9(-4)	1.1(-5)	4.5(-8)	**	**	**
5/79	3.9(-4)	3.1(-7)	8.0(-9)	2.1(-4)	2.5(-6)	2.4(-8)
6/79	3.7(-4)	2.1(-6)	2.7(-7)	3.7(-4)	2.1(-6)	3.4(-8)
7/79	8.0(-4)	1.8(-6)	2.9(-6)	7.0(-4)	2.7(-6)	4.3(-6)
8/79	**	**	**	3.9(-4)	7.2(-7)	1.6(-7)
9/79	5.8(-4)	8.3(-6)	<2 (-7)	**	**	**
10/79	9.6(-4)	4.6(-7)	7.8(-8)	1.3(-3)	9.0(-6)	<1 (-6)
11/79	7.1(-4)	8.8(-6)	8.5(-8)	**	**	**
12/79	7.7(-4)	9.2(-6)	<6 (-8)	**	3.3(-6)	1.9(-7)
4/82	6.0(-4)	<8 (-7)	<5 (-7)	1.5(-4)	3.0(-7)	5.6(-6)
5/82	6.2(-4)	<9 (-7)	<2 (-7)	3.4(-4)	3.0(-7)	5.6(-6)
6/82	4.0(-4)	8.6(-6)	6.8(-6)	3.3(-4)	8.2(-7)	8.9(-7)
7/82	5.3(-4)	1.5(-6)	8.2(-7)	3.3(-4)	1.2(-6)	6.1(-7)
8/82	8.6(-4)	1.7(-6)	<? (-7)	2.8(-4)	<4 (-7)	<3 (-7)
9/82	2.4(-4)	<9 (-7)	<4 (-7)	2.2(-4)	1.4(-6)	<2 (-7)
10/82	6.0(-4)	2.1(-5)	<5 (-7)	7.3(-4)	8.2(-5)	3.4(-6)
11/82	9.9(-4)	1.5(-6)	<5 (-7)	4.8(-4)	4.3(-6)	1.0(-6)

Table B.3-119 (cont'd)
MONTHLY BETA EMITTER RADIONUCLIDE CONCENTRATIONS
IN REACTOR COOLANT (PLANT DATA)
(microcuries/gram)

	Unit 1			Unit 2		
Date	^{3}H	^{89}Sr	^{90}Sr	^{3}H	^{89}Sr	^{90}Sr
12/82	8.2(-4)	5.6(-7)	<1 (-7)	1.4(-3)	3.8(-5)	6.2(-7)
1/83	2.5(-3)	**	**	**	**	**

** Not reported by plant.

Table B.3-120
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

	Unit No. 1		Unit No. 2	
Date	Percent Power	µCi/g	Percent Power	µCi/g
1-76	N/A	N/A	72.0	8.0 (-6)
2-76	N/A	N/A	97.0	1.6 (-5)
3-76	N/A	N/A	75.0	5.1 (-6)
4-76	N/A	N/A	Outage	**
5-76	N/A	N/A	Outage	**
6-76	N/A	N/A	Outage	**
7-76	N/A	N/A	92.0	5.1 (-6)
8-76	N/A	N/A	88.0	1.7 (-3)
9-76	N/A	N/A	48.0	4.0 (-4)
10-76	Outage	**	91.6	5.9 (-4)
11-76	Outage	**	Outage	**
12-76	19.0	1.84(-6)	54.0	1.7 (-4)
1-77	64.0	7.99(-6)	89.0	2.1 (-4)
2-77	71.0	5.47(-6)	60.0	5.2 (-4)
	72.0	1.39(-5)		
3-77	98.0	8.43(-6)	65.0	4.8 (-4)
	95.0	5.84(-6)		
4-77	98.0	1.65(-5)	75.0	4.27(-4)
	100.0	4.16(-5)		
5-77	Outage	**	81.0	6.0 (-4)
6-77	Outage	**	86.0	2.8 (-3)
7-77	75.0	1.63(-5)	83.0	2.2 (-3)
	83.0	1.35(-5)	94.0	4.20(-3)

Table B.3-120 (cont'd)
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

	Unit No. 1		Unit No. 2	
Date	Percent Power	μCi/g	Percent Power	μCi/g
8-77	100.0	4.04(-5)	76.0	2.5 (-3)
			100.0	9.36(-3)
9-77	93.0	1.39(-5)	81.0	1.3 (-3)
			93.0	2.49(-3)
10-77	100.0	1.16(-5)	Outage	**
	100.0	1.23(-5)		
11-77	100.0	9.97(-6)	Outage	**
	96.0	2.18(-5)		
12-77	100.0	1.79(-5)	Outage	**
1-78	76.0	7.85(-6)	93.0	3.94(-5)
	98.5	1.81(-5)	69.0	4.31(-5)
2-78	93.8	1.05(-5)	92.5	2.1 (-5)
3-78	99.9	1.18(-5)	83.0	3.1 (-5)
	100.0	1.22(-5)	96.0	3.0 (-5)
4-78	100.0	1.85(-5)	74.0	3.57(-5)
	100.0	1.08(-5)	99.8	2.65(-5)
5-78	97.0	1.71(-5)	97.0	2.6 (-5)
6-78	100.0	1.90(-5)	0.0	1.3 (-4)
			98.0	2.8 (-5)
7-78	100.0	2.1 (-5)	100.0	3.3 (-5)
			99.8	3.7 (-5)

Table B.3-120 (cont'd)
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

	Unit No. 1		Unit No. 2	
Date	Percent Power	µCi/g	Percent Power	µCi/g
8-78	100.0	1.85(-5)	100.0	2.7 (-5)
			99.4	4.2 (-5)
9-78	100.0	3.01(-5)	100.0	4.9 (-5)
			99.5	3.2 (-5)
10-78	100.0	1.71(-5)	99.6	3.7 (-5)
			99.8	3.3 (-5)
11-78	78.0	3.5 (-5)	99.2	4.7 (-5)
			84.2	4.7 (-5)
12-78	95.0	1.85(-5)	96.0	4.8 (-5)
			93.3	4.0 (-5)
1-79	78.7	1.52(-5)	92.0	3.8 (-5)
			87.3	5.3 (-5)
2-79	Outage	**	87.0	5.2 (-5)
			78.8	3.1 (-5)
3-79	Outage	**	0.0	3.1 (-5)
4-79	Outage	**	Outage	**
5-79	98.3	1.17(-5)	Outage	**
6-79	100.0	1.11(-5)	76.0	2.5 (-5)
7-79	98.0	1.67(-5)	88.0	1.8 (-4)
	98.6	3.34(-5)	96.5	2.2 (-4)
8-79	96.6	1.55(-5)	33.0	1.8 (-4)
			91.5	5.6 (-5)

Table B.3-120 (cont'd)
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

	Unit No. 1		Unit No. 2	
Date	Percent Power	µCi/g	Percent Power	µCi/g
9-79	90.6	3.2 (-5)	69.0	2.5 (-4)
10-79	97.0	2.46(-5)	72.0	3.8 (-4)
			60.0	3.7 (-4)
11-79	99.6	2.87(-5)	91.0	2.0 (-4)
			95.0	2.2 (-4)
12-79	**	**	98.0	4.3 (-4)
1-80	97.0	3.79(-5)	97.0	4.7 (-4)
	99.5	2.48(-5)	95.5	8.7 (-4)
2-80	99.0	1.09(-4)	96.0	5.1 (-4)
	97.8	9.56(-5)	83.0	6.2 (-4)
	99.2	4.36(-5)		
3-80	98.8	2.4 (-5)	Outage	**
4-80	93.0	2.01(-5)	Outage	**
5-80	88.0	2.67(-5)	Outage	**
	45.0	2.43(-5)		
6-80	Outage	**	Outage	**
7-80	Outage	**	Outage	**
8-80	Outage	**	Outage	**
9-80	95.0	9.9 (-6)	56.0	1.7 (-4)
	99.3	1.23(-5)		

Table B.3-120 (cont'd)
REACTOR COOLANT IODINE 131 CONCENTRATIONS (PLANT DATA)

	Unit No. 1		Unit No. 2	
Date	Percent Power	μCi/g	Percent Power	μCi/g
10-80	100.0	8.4 (-6)	80.0	1.2 (-4)
	100.0	8.98(-6)	100.0	2.1 (-4)
11-80	100.0	9.70(-6)	100.0	2.0 (-4)
	100.0	7.29(-6)	95.0	1.4 (-4)
12-80	99.7	5.44(-8)	99.0	1.4 (-4)
1-81		1(-5)		3(-4)
2-81		7(-6)		2(-4)
3-81		5(-6)		4(-4)
4-81		9.6 (-6)		4(-4)
5-81		5(-7)		5(-4)
6-81		7(-7)		2.6 (-3)
7-81		5(-6)		1.4 (-3)
8-81		2.3 (-7)		1.5 (-3)
9-81		3(-6)		2.6 (-3)
10-81		1.3 (-5)		1.4 (-3)
11-81		9(-6)		2.6 (-3)
12-81		6(-6)		2.6 (-3)

** Not reported by plant.

Table B.3-121
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER INLET

Nuclide	Date and Time 3-23-82 1135	4-3-82 1156	4-8-82 0902
^{131}I	0.4	0.5	0.4[b]
^{132}I	*	0.06	0.1
^{133}I	0.1	0.2	0.2
^{134}I	*	<0.4	<1.1
^{135}I	<0.3	0.1	0.1
^{134}Cs	*	13	<16[c]
^{137}Cs	*	11	13
^{24}Na	0.5	1.5	1.0
^{51}Cr	63	63[b]	50[b]
^{54}Mn	>9.9	85	48
^{59}Fe	*	>75[c]	<40[c]
^{58}Co	1.0[b]	39[b]	17[b]
^{60}Co	11	58[b]	21[b]
^{91}Sr	1.1[b]	5.8[b]	2.9[b]
^{99}Mo	<2.7[b]	5.7	3.9
^{132}Te	*	>13	<2.0[b]
^{139}Ba	*	11[b]	6.5[b]

Table B.3-121 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER INLET

Nuclide	Date and Time 3-23-82 1135	4-3-82 1156	4-8-82 0902
^{140}Ba	1.9[b]	13[b]	8.3[b]
^{239}Np	0.4	1.2	0.9

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

c. Percent calculated using a less-than filtrate value.

Table B.3-122
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER OUTLET

Nuclide	Date and Time			
	3-20-82 1027	3-21-82 0930	4-3-82 1224	4-8-82 0854
^{131}I	0.1	0.2	<0.4	<0.5[b]
^{132}I	<0.2	<1.2	<0.6	<1.1
^{133}I	0.1	0.1	0.2	0.2
^{134}I	0.4	*	<10	<5.6
^{135}I	0.1	<0.3	<0.3	<0.9
^{134}Cs	9.5	4.0	5.6	<20[b]
^{137}Cs	13	4.1	8.4	<13
^{24}Na	0.8	0.5[b]	0.7	0.9
^{51}Cr	>2.3[c]		42[b]	>33
^{58}Co	*	*	>8.6[c]	>33
^{60}Co	<2.3[b]	<9.1[c]	*	c
^{91}Sr	1.2	<4.1	4.5[b]	c
^{99}Mo	*	*	<3.4	c
^{132}Te	*	*	>1.5	c
^{139}Ba	2.9[b]	*	<14	6.0[b]

Table B.3-122 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER OUTLET

Nuclide	Date and Time 3-20-82 1027	3-21-82 0930	4-3-82 1224	4-8-82 0854
^{140}Ba	>1.4c	<1.8	*	*
^{239}Np	<0.1	0.2	<1.1	0.6

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

c. Percent calculated using a less-than filtrate value.

Table B.3-123
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B" OUTLET

Nuclide	Date and Time 3-23-82 1140	4-3-82 1206	4-8-82 0900
^{131}I	0.2	0.3	<0.3
^{132}I	*	<12[c]	<0.2
^{133}I	0.1	0.2	0.1
^{134}I	*	*	2.1
^{135}I	<0.7[b]	0.7	<3.0
^{134}Cs	*	*	10
^{136}Cs	*	*	8.2[b]
^{137}Cs	6.8	>61[c]	14
^{138}Cs	*	*	*
^{24}Na	0.6	1.2	1.1
^{51}Cr	>20[c]	26	45
^{54}Mn	*	>9.5[c]	*
^{59}Fe	*	>13[c]	<42
^{58}Co	>1.0	*	*
^{60}Co	>11	>9.0[c]	<15[b]
^{91}Sr	<8.0[b]		<5.3[b]
^{91m}Y	*	*	*
^{99}Mo	*	*	<6.3

Table B.3-123 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "B"

Nuclide	Date and Time 3-23-82 1140	4-3-82 1206	4-8-82 0900
^{132}Te	*	*	>4.7
^{139}Ba	*	*	10[b]
^{140}Ba	*	9.1	*
^{239}Np	0.5	0.7	<0.7

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

c. Percent calculated using a less-than filtrate value.

Table B.3-124
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D" OUTLET

Nuclide	Date and Time 3-23-82 1145	4-3-82 1216	4-8-82 0857
^{131}I	<0.2	0.3	<2.8b
^{132}I	*	<0.5	<3.0
^{133}I	<0.1	0.2	<0.3
^{134}I	*	<2.6	<18c
^{135}I	<2.3b	0.2	<1.5
^{134}Cs	*	13	<23c
^{137}Cs	10	14	*
^{24}Na	0.5	1.2	1.0
^{51}Cr	>2.9c	>11c	>43
^{54}Mn	*	>8.6c	*
^{59}Fe	*	*	*
^{58}Co	*	>14c	*
^{60}Co	*	24b	>37c
^{91}Sr	*	6.2	*
^{99}Mo	*	*	<11c
^{132}Te	*	*	*

Table B.3-124 (cont'd)
PERCENT FILTERED FRACTION IN UNIT NO. 2 CONDENSATE FILTER DEMINERALIZER "D"

Nuclide	Date and Time 3-23-82 1145	4-3-82 1216	4-8-82 0857
^{139}Ba	*	27[b]	10[b]
^{140}Ba	*	>8.0[c]	>33[c]
^{239}Np	0.4	1.1	>29[c]

* No sum value to allow for percent calculation.

b. Sum and grab values do not agree.

c. Percent calculated using a less-than filtrate value.

Table B.4-1
FLOOR DRAIN COLLECTION TANK
(microcuries/gram)

Nuclide	Date and Time				
	03-24-82 1205	04-07-82[a] 1030	05-06-82 1038	10-22-82 1015	10-26-82[b] 1030
^{84}Br	<4(-5)	<1(-5)	<2(-5)	<9(-4)	<5(-5)
^{131}I	1.61 ± 0.02(-4)	1.34 ± 0.01(-5)	3.13 ± 0.05(-5)	6.2 ± 0.2 (-5)	1.59 ± 0.09(-5)
^{132}I	6 ± 2 (-6)	3.1 ± 0.4 (-6)	<5(-6)	1.7 ± 0.6 (-5)	7 ± 1 (-6)
^{133}I	1.53 ± 0.02(-4)	3.5 ± 0.1 (-5)	<1(-6)	2.69 ± 0.06(-4)	7.5 ± 0.1 (-5)
^{134}I	<6(-6)	<2(-6)	<9(-5)	<3(-4)	<7(-5)
^{135}I	9.8 ± 0.3 (-5)	2.6 ± 0.1 (-5)	<2(-6)	1.77 ± 0.05(-4)	7.2 ± 0.2 (-5)
^{88}Rb	<2(-4)	<7(-5)	<2(-4)	<5(-3)	<3(-4)
^{89}Rb	<1(-4)	<4(-5)	<5(-4)	*	<8(-4)
^{134}Cs	1.20 ± 0.01(-3)	8.16 ± 0.08(-5)	1.96 ± 0.02(-4)	1.87 ± 0.01(-4)	1.41 ± 0.02(-4)
^{136}Cs	2.1 ± 0.1 (-5)	<1(-6)	4.8 ± 0.7 (-6)	<3(-6)	<4(-6)
^{137}Cs	1.50 ± 0.01(-3)	1.06 ± 0.03(-4)	2.64 ± 0.04(-4)	2.90 ± 0.02(-4)	2.21 ± 0.02(-4)
^{138}Cs	<7(-6)	<3(-6)	<4(-6)	<4(-4)	<1(-5)
^{139}Cs	<2(-2)	<3(-3)	*	*	*
^{24}Na	2.36 ± 0.04(-4)	6.4 ± 0.2 (-5)	3.0 ± 0.2 (-6)	1.10 ± 0.02(-4)	2.26 ± 0.08(-5)
^{51}Cr	7.7 ± 0.2 (-4)	1.77 ± 0.04(-4)	2.89 ± 0.05(-4)	2.13 ± 0.06(-4)	3.3 ± 0.4 (-5)
^{54}Mn	4.18 ± 0.04(-4)	7.8 ± 0.6 (-5)	2.89 ± 0.06(-4)	8.8 ± 0.1 (-4)	2.87 ± 0.05(-4)
^{55}Mn	<9(-6)	<3(-6)	<1(-6)	<9(-6)	<6(-5)
^{59}Fe	4.0 ± 0.1 (-5)	8.7 ± 0.8 (-6)	2.3 ± 0.1 (-5)	8.0 ± 0.3 (-6)	8 ± 1 (-6)
^{57}Co	<1(-6)	<5(-7)	<9(-7)	<2(-6)	<2(-6)
^{58}Co	1.32 ± 0.04(-4)	1.4 ± 0.2 (-5)	5.7 ± 0.2 (-5)	7.5 ± 0.1 (-5)	1.86 ± 0.07(-5)
^{60}Co	8.0 ± 0.1 (-4)	1.20 ± 0.02(-4)	5.56 ± 0.08(-4)	1.85 ± 0.02(-3)	7.80 ± 0.09(-4)
^{65}Zn	2.2 ± 0.2 (-5)	<3(-6)	1.8 ± 0.1 (-5)	5.1 ± 0.4 (-5)	2.4 ± 0.2 (-5)
^{91}Sr	3.9 ± 0.6 (-5)	1.3 ± 0.1 (-5)	<4(-6)	2.61 ± 0.02(-3)	1.59 ± 0.03(-4)
^{91m}Y	<3(-5)	7 ± 2 (-6)	<8(-6)	<6(-4)	7 ± 1 (-5)
^{93}Y	<4(-3)	<9(-6)	<2(-5)	<3(-5)	<2(-5)
^{95}Zr	<8(-6)	<2(-6)	<4(-6)	<3(-6)	<3(-6)

Table B.4-1 (cont'd)
FLOOR DRAIN COLLECTION TANK
(microcuries/gram)

Nuclide	Date and Time 03-24-82 1205	04-07-82[a] 1030	05-06-82 1038	10-22-82 1015	10-26-82[b] 1030
^{95}Nb	<2(-6)	<7(-7)	<2(-6)	<7(-6)	<3(-6)
^{99}Mo	4.6 ± 0.5 (-5)	<2(-5)	<7(-6)	<2(-4)	<3(-5)
^{103}Ru	<3(-6)	<2(-6)	<2(-6)	<3(-6)	<2(-6)
^{106}RuD	<3(-5)	<7(-6)	<9(-6)	<3(-5)	<3(-5)
^{110m}Ag	9.4 ± 0.8 (-6)	1.3 ± 0.5 (-6)	8.0 ± 0.8 (-6)	1.4 ± 0.2 (-5)	7 ± 3 (-6)
^{124}Sb	<2(-6)	<9(-7)	<8(-7)	<3(-6)	<9(-7)
^{125}Sb	<5(-6)	<3(-6)	<2(-6)	<6(-6)	<5(-6)
^{129m}Te	<2(-5)	<7(-6)	<8(-6)	<2(-5)	<2(-5)
^{129}Te	<1(-4)	<3(-5)	<6(-5)	<2(-4)	<7(-5)
^{131m}Te	<1(-5)	<5(-6)	<5(-6)	<7(-5)	<8(-6)
^{131}Te	<2(-4)	*	<2(-4)	<3(-3)	<3(-4)
^{132}Te	<2(-6)	<7(-7)	<2(-6)	4 ± 2 (-6)	1.2 ± 0.5 (-6)
^{139}Ba	<2(-5)	<5(-6)	<5(-6)	3.02 ± 0.02(-3)	1.6 ± 0.4 (-5)
^{140}Ba	5.4 ± 0.3 (-5)	7 ± 4 (-6)	1.6 ± 0.2 (-5)	3.87 ± 0.06(-4)	5.6 ± 0.3 (-5)
^{140}La	2.3 ± 0.2 (-5)	6.6 ± 0.4 (-6)	1.37 ± 0.05(-5)	8.8 ± 0.2 (-5)	2.27 ± 0.06(-5)
^{141}Ce	<2(-6)	<3(-6)	<1(-6)	<5(-6)	<2(-2)
^{143}Ce	<4(-6)	<2(-6)	<2(-6)	<6(-6)	<2(-6)
^{144}Ce	<6(-6)	<5(-6)	<4(-6)	<2(-5)	<8(-6)
^{152}Eu	<4(-6)	<2(-6)	<1(-6)	<5(-6)	<4(-6)
^{154}Eu	<2(-6)	<12(-6)	<1(-6)	<4(-6)	<5(-6)
^{155}Eu	<2(-5)	<2(-6)	<3(-6)	<2(-5)	<8(-6)
^{187}W	<2(-5)	<3(-6)	<3.9(-6)	<1(-4)	<4(-6)
^{239}Np	5.4 ± 0.2 (-5)	4.8 ± 0.9 (-6)	3.9 ± 0.9 (-6)	6.2 ± 0.4 (-5)	2.6 ± 0.1 (-5)

* Value not measured.

a. The listed valves may have short-lived contaminants present.

b. Sample very murky.

Table B.4-2
RADWASTE COLLECTION TANK
(microcuries/gram)

Nuclide	Date and Time					
	03-31-82[a] 0921	04-07-82[a] 1017	04-23-82[b] 1100	10-22-82 1025	10-26-82[c] 1035	11-11-82 1135
^{84}Br	<2(-4)	<4(-4)	*	<5(-4)	<2(-4)	*
^{131}I	2.88 ± 0.02(-4)	1.97 ± 0.03(-4)	<9(-7)	4.4 ± 0.1 (-5)	3.16 ± 0.05(-5)	<5(-6)
^{132}I	1.67 ± 0.02(-4)	1.48 ± 0.03(-4)	<2(-4)	<2(-5)	3.5 ± 0.2 (-5)	*
^{133}I	2.81 ± 0.03(-4)	3.3 ± 0.4 (-4)	<2(-6)	4.6 ± 0.2 (-5)	8.6 ± 0.1 (-5)	<1(-5)
^{134}I	2.6 ± 0.1 (-4)	8.4 ± 0.9 (-5)	*	<5(-4)	7.3 ± 0.8 (-5)	*
^{135}I	3.61 ± 0.06(-4)	4.92 ± 0.07(-4)	<6(-6)	<3(-5)	1.25 ± 0.02(-4)	*
^{88}Rb	<2(-3)	<1(-3)	*	<3(-3)	*	*
^{89}Rb	<2(-3)	<2(-3)	*	*	*	*
^{134}Cs	1.60 ± 0.08(-4)	4.68 ± 0.04(-4)	7.8 ± 0.3 (-6)	2.15 ± 0.02(-4)	5.35 ± 0.06(-5)	3.9 ± 0.1 (-5)
^{136}Cs	<6(-6)	<1(-5)	<7(-7)	<5(-6)	<2(-6)	<3(-6)
^{137}Cs	2.18 ± 0.02(-4)	6.9 ± 0.1 (-4)	1.41 ± 0.04(-5)	3.37 ± 0.02(-4)	8.17 ± 0.08(-5)	6.9 ± 0.1 (-5)
^{138}Cs	1.2 ± 0.2 (-4)	<7(-5)	*	<8(-5)	<3(-5)	*
^{139}Cs	*	*	*	*	*	*
^{24}Na	5.4 ± 0.1 (-4)	9.7 ± 0.1 (-4)	<2(-7)	6.5 ± 0.6 (-5)	4.68 ± 0.09(-5)	3.77 ± 0.07(-4)
^{51}Cr	5.24 ± 0.05(-3)	5.67 ± 0.02(-3)	9.0 ± 0.4 (-5)	2.40 ± 0.06(-4)	2.46 ± 0.04(-4)	1.11 ± 0.05(-4)
^{54}Mn	6.16 ± 0.04(-4)	1.21 ± 0.02(-3)	5.3 ± 0.1 (-5)	1.31 ± 0.02(-3)	9.4 ± 0.1 (-4)	3.16 ± 0.05(-4)
^{56}Mn	<6(-5)	<2(-5)	<9(-5)	<8(-6)	<3(-5)	<2(-3)
^{59}Fe	1.43 ± 0.05(-4)	2.19 ± 0.04(-4)	4.0 ± 0.3 (-6)	9.3 ± 0.2 (-5)	8.5 ± 0.2 (-5)	2.6 ± 0.2 (-5)
^{57}Co	<3(-6)	<5(-6)	<3(-7)	<3(-6)	1.1 ± 0.3 (-6)	<2(-6)
^{58}Co	1.3 ± 0.1 (-4)	2.68 ± 0.09(-4)	8.3 ± 0.5 (-6)	1.46 ± 0.04(-4)	7.5 ± 0.3 (-5)	2.5 ± 0.1 (-5)
^{60}Co	9.9 ± 0.2 (-4)	2.41 ± 0.04(-3)	7.97 ± 0.09(-5)	2.37 ± 0.03(-3)	1.64 ± 0.02(-3)	6.66 ± 0.08(-4)
^{65}Zn	4.0 ± 0.4 (-5)	6.2 ± 0.5 (-5)	<2(-6)	5.3 ± 0.4 (-5)	4.6 ± 0.2 (-5)	1.1 ± 0.3 (-5)
^{91}Sr	9.9 ± 0.2 (-4)	5.3 ± 0.2 (-4)	<8(-6)	<3(-5)	3.6 ± 0.2 (-5)	<5(-5)
^{91m}Y	2.3 ± 0.7 (-5)	1.5 ± 0.5 (-4)	*	<4(-5)	<2(-5)	*
^{93}Y	<4(-5)	<7(-5)	<2(-5)	<4(-5)	<2(-5)	<7(-5)
^{95}Zr	<7(-6)	<2(-5)	<9(-7)	<1(-5)	<5(-6)	<4(-6)

Table B.4-2 (cont'd)
RADWASTE COLLECTION TANK
(microcuries/gram)

Nuclide	Date and Time					
	03-31-82[a] 0921	04-07-82[a] 1017	04-23-82[b] 1100	10-22-82 1025	10-26-82[c] 1035	11-11-82 1135
^{95}Nb	<6(-6)	<8(-6)	<4(-7)	<1(-5)	5.6 ± 0.7 (-6)	<2(-6)
^{99}Mo	1.01 ± 0.08(-4)	1.0 ± 0.2 (-4)	<4(-6)	<4(-5)	<3(-5)	<2(-5)
^{103}Ru	<9(-6)	<8(-6)	<7(-7)	<4(-6)	<4)-6)	<2(-6)
^{106}RuD	<9(-5)	<5(-5)	<6(-6)	<4(-5)	<2(-5)	<2(-5)
^{110m}Ag	<2(-5)	2.1 ± 0.6 (-5)	1.13 ± 0.04(-5)	2.2 ± 0.3 (-5)	9.8 ± 0.5 (-6)	9 ± 1 (-6)
^{124}Sb	<7(-6)	<2(-5)	<3(-7)	<7(-6)	1.9 ± 0.4 (-6)	<3(-6)
^{125}Sb	<6(-6)	<2(-5)	<2(-6)	<2(-5)	<4(-6)	<7(-6)
^{129m}Te	<3(-5)	<7(-5)	<4(-6)	<4(-5)	<2(-5)	<2(-5)
^{129}Te	<1(-4)	<3(-4)	*	<2(-4)	<8(-5)	*
^{131m}Te	<2(-5)	<2(-5)	<4(-6)	<3(-5)	<1(-5)	<2(-5)
^{131}Te	<6(-4)	<6.4(-4)	*	<2(-3)	<2(-3)	*
^{132}Te	<4(-6)	<5(-6)	<9(-7)	<7(-6)	<4(-6)	<2(-6)
^{139}Ba	1.80 ± 0.03(-3)	4.0 ± 0.1 (-4)	*	<3(-5)	3.0 ± 0.4 (-5)	*
^{140}Ba	4.39 ± 0.07(-4)	3.42 ± 0.07(-4)	<2(-6)	3.9 ± 0.4 (-5)	3.1 ± 0.2 (-5)	8 ± 3 (-6)
^{140}La	2.14 ± 0.03(-4)	2.04 ± 0.03(-4)	4.5 ± 0.3 (-6)	3.5 ± 0.2 (-5)	2.34 ± 0.06(-5)	6 ± 2 (-6)
^{141}Ce	1.5 ± 0.3 (-5)	1.6 ± 0.2 (-5)	<6(-7)	<5(-6)	<5(-6)	<2(-6)
^{143}Ce	<4(-6)	<9(-6)	<7(-7)	<5(-6)	<2(-6)	<4(-6)
^{144}Ce	<2(-5)	<2(-5)	<2(-6)	<2(-5)	<3(-5)	<1(-5)
^{152}Eu	<6(-6)	<9(-6)	<1(-6)	<7(-6)	<3(-6)	<4(-6)
^{154}Eu	<9(-6)	<7(-6)	<5(-7)	<6(-6)	<3(-6)	<3(-6)
^{155}Eu	<2(-5)	<2(-5)	<8(-7)	<9(-6)	<6(-6)	<4(-6)
^{187}W	<2(-5)	<2(-5)	<3(-6)	<2(-5)	<8(-6)	<2(-5)
^{239}Np	<2(-4)	<9(-5)	<2(-6)	<2(-5)	<8(-5)	<6(-6)

Table B.4-2 (cont'd)
RADWASTE COLLECTION TANK
(microcuries/gram)

Nuclide	Date and Time: 11-13-82[a] 1310	Date and Time: 11-16-82 1206
^{84}Br	*	<2(-5)
^{131}I	4.1 ± 0.5 (-6)	<2(-5)
^{132}I	<1(-5)	<4(-6)
^{133}I	<6(-6)	<6(-6)
^{134}I	<2(-4)	<9(-5)
^{135}I	<1(-5)	<6(-6)
^{88}Rb	*	<3(-5)
^{89}Rb	*	<4(-5)
^{134}Cs	3.15 ± 0.05(-5)	3.8 ± 0.1 (-5)
^{136}Cs	<2(-6)	<4(-6)
^{137}Cs	5.76 ± 0.09(-5)	7.0 ± 0.2 (-5)
^{138}Cs	*	<3(-6)
^{139}Cs	*	<4(-4)
^{24}Na	5.84 ± 0.09(-4)	1.83 ± 0.02(-4)
^{51}Cr	1.27 ± 0.04(-4)	2.26 ± 0.08(-4)
^{54}Mn	2.33 ± 0.04(-4)	1.01 ± 0.01(-3)
^{56}Mn	<4(-5)	<5(-6)
^{59}Fe	1.80 ± 0.09(-5)	1.12 ± 0.03(-4)
^{57}Co	<7(-7)	<3(-6)
^{58}Co	2.47 ± 0.07(-5)	9.5 ± 0.2 (-5)
^{60}Co	6.48 ± 0.08(-4)	1.70 ± 0.02(-3)
^{65}Zn	<1(-5)	5.0 ± 0.4 (-5)
^{91}Sr	<7(-6)	<1(-5)
^{91m}Y	<5(-4)	<4(-6)
^{93}Y	<2(-5)	<2(-5)
^{95}Zr	<3(-6)	<6(-6)

Table B.4-2 (cont'd)
RADWASTE COLLECTION TANK
(microcuries/gram)

Nuclide	Date and Time: 11-13-82[a] 1310	Date and Time: 11-16-82 1206
^{95}Nb	<3(-6)	<9(-6)
^{99}Mo	<9(-6)	<2(-5)
^{103}Ru	<2(-6)	<5(-6)
^{106}RuD	<2(-5)	<4(-5)
^{110m}Ag	5.6 ± 0.8 (-6)	2.2 ± 0.2 (-5)
^{124}Sb	<2(-6)	<4(-6)
^{125}Sb	<4(-6)	<6(-6)
^{129m}Te	<1(-5)	<3(-5)
^{129}Te	<2(-3)	<7(-5)
^{131m}Te	<8(-6)	<2(-5)
^{131}Te	*	<4(-5)
^{132}Te	<8(-7)	<2(-6)
^{139}Ba	<9(-5)	<7(-6)
^{140}Ba	5 ± 2 (-6)	<9(-6)
^{140}La	5.8 ± 0.5 (-6)	2.9 ± 0.6 (-6)
^{141}Ce	<2(-6)	<2(-6)
^{143}Ce	<2(-6)	<7(-6)
^{144}Ce	<6(-6)	<2(-5)
^{152}Eu	<3(-6)	<5(-6)
^{154}Eu	<3(-6)	<5(-6)
^{155}Eu	<2(-6)	<6(-6)
^{187}W	<6(-6)	<1(-5)
^{239}Np	<3(-6)	<6(-6)

* No value measured.
a. Sample may have short-lived contaminants present.
b. Waste surge tank sample.
c. Sample very opaque.

Table B.4-3a
WASTE NEUTRALIZER TANK "B" EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 03-24-82 1210	03-31-82 0918	04-07-82 1026	04-20-82 0900	05-19-82 1555
^{84}Br	<9(-5)	<7(-6)	<7(-6)	<7(-6)	<2(-5)
^{131}I	2.21 ± 0.03(-4)	5.6 ± 0.9 (-7)	3.9 ± 0.2 (-6)	3.4 ± 0.4 (-6)	1.31 ± 0.01(-4)
^{132}I	1.7 ± 0.2 (-5)	<3(-7)	<2(-6)	<2(-6)	<2(-6)
^{133}I	6.22 ± 0.07(-4)	2 ± 1 (-7)	1.8 ± 0.2 (-6)	1.4 ± 0.4 (-6)	<2(-6)
^{134}I	<3(-4)	<5(-6)	<5(-6)	<2(-6)	<4(-6)
^{135}I	4.65 ± 0.3 (-4)	<9(-7)	<3(-6)	<2(-6)	<2(-6)
^{88}Rb	<5(-4)	<2(-4)	<3(-5)	<2(-5)	*
^{89}Rb	<5(-4)	<3(-4)	<3(-5)	<3(-5)	*
^{134}Cs	7.71 ± 0.03(-4)	5.1 ± 0.8 (-7)	8.5 ± 0.3 (-6)	8.4 ± 0.5 (-6)	1.90 ± 0.02(-4)
^{136}Cs	2.1 ± 0.1 (-5)	<2(-7)	<5(-7)	<1(-6)	8.8 ± 0.4 (-6)
^{137}Cs	9.53 ± 0.09(-4)	6 ± 1 (-7)	1.30 ± 0.04(-5)	1.23 ± 0.07(-5)	2.44 ± 0.03(-4)
^{138}Cs	<2(-5)	<3(-6)	<2(-6)	<3(-6)	*
^{139}Cs	*	*	<3(-3)	<4(-4)	*
^{24}Na	1.21 ± 0.03(-3)	<6(-8)	1.7 ± 0.2 (-6)	<3(-7)	9.7 ± 0.4 (-6)
^{51}Cr	3.11 ± 0.02(-5)	<3(-5)	1.87 ± 0.03(-4)	2.20 ± 0.08(-4)	6.12 ± 0.30(-5)
^{54}Mn	7.7 ± 0.1 (-4)	2.1 ± 0.2 (-6)	4.2 ± 0.1 (-5)	5.0 ± 0.2 (-5)	1.06 ± 0.02(-4)
^{56}Mn	<7(-6)	<2(-6)	<2(-6)	<2(-6)	<2(-6)
^{59}Fe	1.29 ± 0.02(-4)	5 ± 1 (-7)	9.6 ± 0.5 (-6)	7.5 ± 0.8 (-6)	3.2 ± 0.6 (-6)
^{57}Co	<8(-6)	<3(-7)	<5(-7)	<6(-7)	<6(-7)
^{58}Co	2.03 ± 0.08(-4)	5 ± 1 (-7)	7.2 ± 0.3 (-6)	7.2 ± 0.7 (-6)	4.26 ± 0.08(-5)
^{60}Co	1.32 ± 0.02(-3)	4.4 ± 0.2 (-5)	6.7 ± 0.1 (-5)	1.33 ± 0.02(-4)	3.48 ± 0.05(-4)
^{65}Zn	4.7 ± 0.4 (-5)	<5(-7)	2.0 ± 0.5 (-6)	3 ± 1 (-6)	1.2 ± 0.2 (-5)
^{91}Sr	1.2 ± 0.2 (-4)	<9(-7)	<5(-6)	<3(-6)	<4(-6)
^{91m}Y	<5(-5)	<9(-7)	<2(-6)	*	<5(-6)
^{93}Y	<2(-5)	<2(-6)	<4(-6)	<2(-5)	<7(-6)
^{95}Zr	<3(-6)	<4(-7)	<1(-6)	<2(-6)	<3(-6)

Table B.4-3a (cont'd)
WASTE NEUTRALIZER TANK "B" EFFLUENT
(microcuries/gram)

Nuclide	Date and Time				
	03-24-82 1210	03-31-82 0918	04-07-82 1026	04-20-82 0900	05-19-82 1555
^{95}Nb	<2(-6)	<3(-7)	<6(-7)	<7(-7)	<2(-6)
^{99}Mo	1.6 ± 0.2 (-4)	<2(-5)	<4(-6)	<7(-6)	<7(-6)
^{103}Ru	<7(-6)	<2(-7)	<7(-7)	<9(-7)	2(-6)
^{106}RuD	<2(-5)	<2(-6)	<6(-6)	<2(-5)	2(-5)
^{110m}Ag	3.7 ± 0.2 (-5)	<8(-7)	2.5 ± 0.9 (-6)	<3(-6)	<3(-6)
^{124}Sb	<3(-6)	<4(-7)	<6(-7)	<3(-7)	<5(-7)
^{125}Sb	<1(-5)	<8(-7)	<9(-7)	<3(-6)	<3(-6)
^{129m}Te	<3(-5)	<3(-6)	<4(-6)	<9(-6)	<8(-6)
^{129}Te	<6(-5)	<9(-6)	<1.4(-5)	<2(-5)	<3(-5)
^{131m}Te	<2(-5)	<9(-7)	<3(-6)	<4(-6)	<5(-6)
^{131}Te	<2(-4)	<6(-5)	<3(-5)	<2(-5)	*
^{132}Te	<4(-6)	<6(-7)	<6(-7)	<7(-7)	<1(-6)
^{139}Ba	<1(-5)	<2(-6)	<4(-6)	<5(-6)	<5(-6)
^{140}Ba	1.21 ± 0.04(-4)	<2(-6)	7.6 ± 0.7 (-6)	9 ± 2 (-6)	6 ± 2 (-6)
^{140}La	4.6 ± 0.3 (-5)	<3(-6)	7.6 ± 0.3 (-6)	6.2 ± 0.5 (-6)	3.1 ± 0.3 (-6)
^{141}Ce	<6(-6)	<6(-7)	<8(-7)	<2(-6)	1.2 ± 0.4 (-6)
^{143}Ce	<1(-5)	<6(-7)	<7(-7)	<2(-6)	1.8 ± 0.7 (-6)
^{144}Ce	<9(-6)	<2(-6)	<4(-6)	<5(-6)	<5(-6)
^{152}Eu	<4(-6)	<6(-7)	<9(-7)	<2(-6)	<3(-6)
^{154}Eu	<3(-6)	<5(-6)	<8(-7)	<2(-6)	<2(-6)
^{155}Eu	<6(-6)	<6(-7)	<1(-6)	<2(-6)	<2(-6)
^{187}W	<2(-5)	<8(-7)	<2(-6)	<3(-6)	<6(-6)
^{239}Np	<7(-4)	<9(-7)	<7(-6)	<3(-6)	<3(-6)

Table 8.4-3a (cont'd)
WASTE NEUTRALIZER TANK "B" EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 05-26-82 1650	05-27-82 1058
^{84}Br	<5(-4)	<6(-5)
^{131}I	1.8 ± 0.1 (-6)	4.7 ± 0.2 (-6)
^{132}I	<9(-7)	<2(-6)
^{133}I	<2(-7)	<3(-7)
^{134}I	<3(-4)	<4(-5)
^{135}I	<7(-7)	<2(-6)
^{88}Rb	*	*
^{89}Rb	*	*
^{134}Cs	1.27 ± 0.8 (-6)	1.2 ± 0.1 (-6)
^{136}Cs	<2(-7)	<3(-7)
^{137}Cs	1.6 ± 0.1 (-6)	1.8 ± 0.2 (-6)
^{138}Cs	*	*
^{139}Cs	*	*
^{24}Na	<1(-7)	<2(-7)
^{51}Cr	5.05 ± 0.07(-5)	1.6 ± 0.1 (-5)
^{54}Mn	2.86 ± 0.07(-5)	8.9 ± 0.3 (-6)
^{56}Mn	<2(-6)	<2(-6)
^{59}Fe	7.2 ± 0.2 (-6)	1.7 ± 0.3 (-6)
^{57}Co	9 ± 4 (-8)	<3(-7)
^{58}Co	4.7 ± 0.2 (-6)	1.7 ± 0.2 (-6)
^{60}Co	6.1 ± 0.1 (-5)	1.9 ± 0.6 (-5)
^{65}Zn	2.6 ± 0.4 (-6)	<6(-7)
^{91}Sr	<8(-7)	<9(-7)
^{91m}Y	*	<4(-6)
^{93}Y	<2(-6)	<3(-8)
^{95}Zr	3 ± 2 (-7)	<6(-7)

Table B.4-3a (cont'd)
WASTE NEUTRALIZER TANK "B" EFFLUENT
(microcuries/gram)

Nuclide	Date and Time: 05-26-82 1650	Date and Time: 05-27-82 1058
^{95}Nb	5 ± 1 (-7)	<5(-7)
^{99}Mo	<2(-6)	<2(-6)
^{103}Ru	5.4 ± 0.7 (-7)	<4(-7)
^{106}RuD	<2(-6)	<2(-6)
^{110m}Ag	1.4 ± 0.1 (-6)	1.0 ± 0.2 (-6)
^{124}Sb	<2(-7)	<4(-7)
^{125}Sb	<4(-7)	<9(-7)
^{129m}Te	<3(-6)	<3(-6)
^{129}Te	<4(-5)	<2(-5)
^{131m}Te	<1(-6)	<2(-6)
^{131}Te	*	<4(-4)
^{132}Te	<2(-7)	<3(-7)
^{139}Ba	<8(-6)	<6(-6)
^{140}Ba	<9(-7)	<9(-7)
^{140}La	9.6 ± 0.6 (-7)	6 ± 2 (-7)
^{141}Ce	4 ± 1 (-7)	<3(-7)
^{143}Ce	<3(-7)	<4(-7)
^{144}Ce	<8(-7)	<2(-6)
^{152}Eu	<4(-7)	<7(-7)
^{154}Eu	<4(-7)	<3(-7)
^{155}Eu	<4(-7)	<9(-7)
^{187}W	<8(-7)	<1(-6)
^{239}Np	<3(-7)	<7(-7)

* No measured value.

Table B.4-3b
WASTE NEUTRALIZER TANK "D" EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 05-19-82 1135	05-26-82 1515	05-27-82 1055
^{84}Br	<2(-5)	<2(-4)	<3(-4)
^{131}I	1.78 ± 0.01(-4)	1.08 ± 1.01(-4)	5.58 ± 0.06(-6)
^{132}I	<6(-6)	<3(-6)	<4(-6)
^{133}I	<3(-6)	<9(-7)	<2(-6)
^{134}I	<2(-5)	<3(-4)	<8(-5)
^{135}I	<3(-6)	<2(-6)	<4(-6)
^{88}Rb	*	*	*
^{89}Rb	*	*	*
^{134}Cs	2.31 ± 0.02(-4)	2.77 ± 0.02(-4)	1.60 ± 0.02(-4)
^{135}Cs	1.00 ± 0.06(-5)	9.5 ± 0.3 (-6)	5.3 ± 0.5 (-6)
^{137}Cs	2.93 ± 0.04(-4)	3.63 ± 0.03(-4)	2.00 ± 0.02(-4)
^{138}Cs	*	*	*
^{139}Cs	*	*	*
^{24}Na	1.86 ± 0.05(-5)	6.4 ± 0.2 (-6)	1.16 ± 0.04(-5)
^{51}Cr	4.53 ± 0.05(-4)	7.52 ± 0.04(-4)	1.92 ± 0.01(-4)
^{54}Mn	2.56 ± 0.04(-4)	3.92 ± 0.05(-4)	1.63 ± 0.03(-4)
^{56}Mn	<2(-6)	<3(-6)	<3(-6)
^{59}Fe	5.5 ± 0.1 (-5)	1.01 ± 0.02(-4)	2.60 ± 0.09(-5)
^{57}Co	<2(-6)	4 ± 2 (-7)	<7(-7)
^{58}Co	7.1 ± 0.1 (-5)	1.09 ± 0.02(-4)	4.5 ± 0.11(-5)
^{60}Co	6.1 ± 0.1 (-4)	8.5 ± 0.1 (-4)	3.78 ± 0.05(-4)
^{65}Zn	2.6 ± 0.2 (-5)	3.4 ± 0.2 (-5)	1.7 ± 0.1 (-5)
^{91}Sr	<7(-6)	<4(-6)	<4(-6)
^{91m}Y	<4(-6)	<3(-5)	<3(-5)
^{93}Y	<2(-5)	<9(-6)	<2(-5)
^{95}Zr	<4(-6)	4.5 ± 0.6 (-6)	<3(-6)

Table 8.4-3b (cont'd)
WASTE NEUTRALIZER TANK "D" EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 05-19-82 1135	05-26-82 1515	05-27-82 1055
^{95}Nb	3.2 ± 0.6 (-6)	5.8 ± 0.3 (-6)	1.1 ± 0.5 (-6)
^{99}Mo	<9(-6)	<8(-6)	<7(-6)
^{103}Ru	3.9 ± 0.7 (-6)	6.7 ± 0.3 (-6)	2.1 ± 0.8 (-6)
^{106}RuD	<2.1(-5)	<6(-6)	<2(-5)
^{110m}Ag	<7(-6)	6.0 ± 0.4 (-6)	2.5 ± 0.4 (-6)
^{124}Sb	<9(-7)	1.0 ± 0.2 (-6)	<2(-6)
^{125}Sb	<5(-6)	<3(-6)	<4(-6)
^{129m}Te	<2(-5)	<7(-6)	<9(-6)
^{129}Te	<3(-5)	*	<1(-4)
^{131m}Te	<7(-6)	<4(-6)	<7(-6)
^{131}Te	<3(-5)	*	*
^{132}Te	<2(-6)	<5(-7)	<9(-7)
^{139}Ba	<6(-6)	*	<2(-5)
^{140}Ba	1.3 ± 0.2 (-5)	1.2 ± 0.1 (-5)	<4(-6)
^{140}La	6.3 ± 0.4 (-6)	7.5 ± 0.3 (-6)	2.7 ± 0.3 (-6)
^{141}Ce	1.3 ± 0.6 (-6)	2.6 ± 0.4 (-6)	1.6 ± 0.5 (-6)
^{143}Ce	<2(-6)	<2(-6)	<2(-6)
^{144}Ce	<8(-6)	<4(-6)	4 ± 2 (-6)
^{152}Eu	<2(-6)	<2(-6)	<2(-6)
^{154}Eu	<2(-6)	<2(-6)	<2(-6)
^{155}Eu	<3(-6)	<2(-6)	<3(-6)
^{187}W	<4(-6)	<3(-6)	<3(-6)
^{239}Np	<3(-6)	<1(-6)	<2(-6)

* No measured value.

Table B.4-3c
WASTE NEUTRALIZER TANK "A" AND "C" EFFLUENTS
(microcuries/gram)

Nuclide	Date and Time Tank "A" 5-24-82 1630	Date and Time Tank "C" 5-24-82 1640
^{84}Br	*	*
^{131}I	3.8 ± 0.2 (-5)	2.8 ± 0.4 (-5)
^{132}I	*	*
^{133}I	<6(-6)	<4(-5)
^{134}I	*	*
^{135}I	<8(-5)	<2(-3)
^{88}Rb	*	*
^{89}Rb	*	*
^{134}Cs	2.98 ± 0.06(-4)	5.81 ± 0.08(-4)
^{136}Cs	<8(-6)	<2(-5)
^{137}Cs	4.82 ± 0.05(-4)	8.93 ± 0.08(-4)
^{138}Cs	*	*
^{139}Cs	*	*
^{24}Na	1.5 ± 0.7 (-6)	<5(-6)
^{51}Cr	7.1 ± 0.1 (-4)	8.2 ± 0.3 (-4)
^{54}Mn	9.0 ± 0.2 (-4)	3.39 ± 0.08(-3)
^{56}Mn	<3(-3)	*
^{59}Fe	8.4 ± 0.4 (-5)	3.4 ± 0.1 (-4)
^{57}Co	<3(-6)	3 ± 1 (-6)
^{58}Co	7.5 ± 0.2 (-5)	3.1 ± 0.1 (-4)
^{60}Co	3.16 ± 0.05(-3)	8.3 ± 0.1 (-3)
^{65}Zn	8.3 ± 0.9 (-5)	2.4 ± 0.2 (-4)
^{91}Sr	<2(-4)	<9(-4)
^{91m}Y	<6(-6)	<2(-5)
^{93}Y	*	*

Table B.4-3c (cont'd)
WASTE NEUTRALIZER TANK "A" AND "C" EFFLUENTS
(microcuries/gram)

Nuclide	Date and Time: Tank "A" 5-24-82 1630	Date and Time: Tank "C" 5-24-82 1640
^{95}Zr	<1(-4)	<2(-3)
^{95}Nb	7 ± 2 (-6)	1.1 ± 0.6 (-5)
^{99}Mo	<4(-5)	<8(-5)
^{103}Ru	<7(-6)	<1(-5)
^{106}RuD	<6(-5)	<1(-4)
^{110m}Ag	<1(-5)	<2(-5)
^{124}Sb	<6(-6)	<2(-5)
^{125}Sb	<1(-5)	<2(-5)
^{129m}Te	<4(-5)	<2(-4)
^{129}Te	*	*
^{131m}Te	<2(-5)	<7(-5)
^{131}Te	*	*
^{132}Te	<4(-6)	<9(-6)
^{139}Ba	*	*
^{140}Ba	<2(-5)	<4(-5)
^{140}La	5 ± 2 (-6)	2.6 ± 0.3 (-5)
^{141}Ce	<5(-6)	<7(-6)
^{143}Ce	<6(-6)	<2(-5)
^{144}Ce	<2(-5)	<3(-5)
^{152}Eu	<9(-6)	<2(-5)
^{154}Eu	<8(-6)	<2(-5)
^{155}Eu	<5(-6)	<2(-5)
^{187}W	<3(-5)	<1(-4)
^{239}Np	<6(-6)	<2(-5)

* Value not measured.

Table B.4-4
FLOOR DRAIN COLLECTION FILTER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 10-26-82 1114
^{84}Br	<2(-5)
^{131}I	3.8 ± 0.2 (-6)
^{132}I	<2(-6)
^{133}I	1.80 ± 0.03(-5)
^{134}I	<3(-6)
^{135}I	1.30 ± 0.07(-5)
^{88}Rb	<4(-4)
^{89}Rb	<3(-4)
^{134}Cs	8.82 ± 0.09(-5)
^{136}Cs	<5(-7)
^{137}Cs	1.39 ± 0.02(-4)
^{138}Cs	<5(-6)
^{139}Cs	*
^{24}Na	1.94 ± 0.04(-5)
^{51}Cr	<5(-6)
^{54}Mn	2.09 ± 0.04(-5)
^{56}Mn	<2(-6)
^{59}Fe	<6(-7)
^{57}Co	<6(-7)
^{58}Co	1.6 ± 0.2 (-6)
^{60}Co	6.50 ± 0.09(-5)
^{65}Zn	<9(-7)
^{91}Sr	1.42 ± 0.07(-5)
^{91m}Y	1.80 ± 0.03(-5)
^{93}Y	<6(-6)
^{95}Zr	<7(-7)

Table B.4-4 (cont'd)
FLOOR DRAIN COLLECTION FILTER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 10-26-82 1114
^{95}Nb	<6(-7)
^{99}Mo	<3(-6)
^{103}Ru	<5(-7)
^{106}RuD	<4(-6)
^{110m}Ag	<7(-7)
^{124}Sb	<3(-7)
^{125}Sb	<2(-6)
^{129m}Te	<6(-6)
^{129}Te	<4(-5)
^{131m}Te	<2(-6)
^{131}Te	<2(-4)
^{132}Te	<5(-7)
^{139}Ba	<5(-6)
^{140}Ba	2 ± 1 (-6)
^{140}La	6.2 ± 0.3 (-6)
^{141}Ce	<8(-7)
^{143}Ce	<2(-6)
^{144}Ce	<3(-6)
^{152}Eu	<1(-6)
^{154}Eu	<1(-6)
^{155}Eu	<3(-6)
^{187}W	<2(-6)
^{239}Np	<2(-5)

* Value not measured.

Table B.4-5
RADWASTE COLLECTION FILTER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time					
	03-24-82 1014	03-31-82[a] 1014	04-07-82 0932	05-06-82[b] 1108	10-26-82 1116	11-11-82 1110
^{84}Br	<3(-6)	<2(-5)	<2(-5)	<5(-5)	*	*
^{131}I	9 ± 2 (-7)	5.6 ± 0.3 (-7)	<3(-7)	3.8 ± 0.6 (-7)	<9(-8)	<3(-7)
^{132}I	<7(-7)	<9(-7)	<6(-7)	<4(-7)	<8(-7)	<9(-7)
^{133}I	<6(-7)	4.2 ± 0.3 (-6)	<2(-7)	<3(-7)	<4(-7)	<3(-7)
^{134}I	<3(-6)	<9(-6)	<3(-6)	<3(-6)	<2(-5)	<2(-5)
^{135}I	<9(-7)	2.7 ± 0.5 (-6)	<9(-7)	<5(-7)	<6(-7)	<8(-7)
^{88}Rb	<7(-6)	<3(-4)	*	*	*	*
^{89}Rb	<8(-6)	<3(-4)	*	*	*	*
^{134}Cs	2.13 ± 0.05(-5)	7.5 ± 0.2 (-6)	2.0 ± 0.1 (-6)	1.4 ± 0.7 (-6)	9 ± 3 (-8)	<5(-7)
^{136}Cs	<7(-7)	<6(-7)	<3(-7)	<4(-7)	<6(-8)	<3(-7)
^{137}Cs	2.91 ± 0.06(-5)	9.9 ± 0.3 (-6)	2.6 ± 0.2 (-6)	1.8 ± 0.2 (-6)	2.9 ± 0.4 (-7)	6 ± 1 (-7)
^{138}Cs	<2(-6)	<5(-6)	*	<4(-5)	*	*
^{139}Cs	<8(-5)	*	*	*	*	*
^{24}Na	<8(-8)	6.6 ± 0.3 (-6)	1.3 ± 0.2 (-6)	<7(-8)	2.4 ± 0.2 (-7)	4.5 ± 0.3 (-6)
^{51}Cr	5.6 ± 0.2 (-5)	1.80 ± 0.03(-4)	1.7 ± 0.6 (-6)	1.8 ± 0.5 (-6)	<6(-7)	<3(-6)
^{54}Mn	3.98 ± 0.08(-5)	2.84 ± 0.07(-5)	4 ± 1 (-7)	1.14 ± 0.09(-6)	1.39 ± 0.08(-6)	8 ± 1 (-7)
^{56}Mn	<8(-7)	<2(-6)	<2(-6)	<8(-7)	<7(-7)	<3(-6)
^{59}Fe	6.1 ± 0.5 (-6)	6.5 ± 0.4 (-5)	4 ± 2 (-7)	<3(-7)	<8(-8)	<5(-7)
^{57}Co	<3(-7)	<4(-7)	<5(-7)	<2(-7)	<9(-8)	<2(-7)
^{58}Co	9.5 ± 0.5 (-6)	6.2 ± 0.3 (-6)	<2(-7)	3.7 ± 0.7 (-7)	1.1 ± 0.3 (-7)	3.2 ± 0.9 (-7)
^{60}Co	5.86 ± 0.08(-5)	4.38 ± 0.07(-5)	1.7 ± 0.2 (-6)	4.2 ± 0.2 (-6)	2.2 ± 0.1 (-6)	2.6 ± 0.2 (-6)
^{65}Zn	<3(-6)	<2(-6)	<5(-7)	<6(-7)	<2(-7)	<3(-7)
^{91}Sr	<2(-6)	5.6 ± 0.7 (-6)	<7(-7)	<5(-7)	<3(-7)	<9(-7)
^{91m}Y	<2(-6)	<8(-6)	<3(-6)	<3(-6)	<2(-5)	<2(-5)
^{93}Y	<5(-6)	<5(-6)	<3(-6)	<2(-6)	<2(-6)	<4(-6)
^{95}Zr	<9(-7)	<1(-6)	<3(-7)	<3(-7)	<7(-8)	<6(-7)

Table B.4-5 (cont'd)
RADWASTE COLLECTION FILTER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time					
	03-24-82 1014	03-31-82[a] 1014	04-07-82 0932	05-06-82[b] 1108	10-26-82 1116	11-11-82 1110
^{95}Nb	<8(-7)	<4(-7)	<2(-7)	<2(-7)	<1(-7)	<2(-7)
^{99}Mo	<4(-6)	<5(-6)	<1(-6)	<9(-7)	<9(-7)	<2(-6)
^{103}Ru	<1(-6)	<6(-7)	<3(-7)	<2(-7)	<1(-7)	<2(-7)
^{106}RuD	<8(-6)	<5(-6)	<3(-6)	<2(-6)	<6(-7)	<2(-7)
^{110m}Ag	8 ± 1 (-7)	<2(-6)	<3(-7)	<2(-7)	7 ± 3 (-8)	<4(-7)
^{124}Sb	<5(-7)	<8(-7)	<5(-7)	<2(-7)	<5(-8)	<5(-7)
^{125}Sb	<1(-6)	<8(-7)	<5(-7)	<4(-7)	<2(-7)	<4(-7)
^{129m}Te	<5(-6)	<4(-6)	<2(-6)	<1(-6)	<5(-7)	<4(-6)
^{129}Te	<7(-6)	<2(-5)	<2(-5)	<3(-5)	<8(-5)	<5(-5)
^{131m}Te	<2(-6)	<2(-6)	<1(-6)	<7(-7)	<3(-7)	<1(-6)
^{131}Te	<2(-5)	<1(-4)	*	<4(-4)	*	*
^{132}Te	<6(-7)	<7(-7)	<2(-7)	<2(-7)	<6(-8)	<2(-7)
^{139}Ba	<2(-6)	<6(-6)	<4(-6)	<6(-6)	<2(-5)	<9(-6)
^{140}Ba	<4(-6)	1.0 ± 0.1 (-5)	<2(-6)	<4(-7)	<2(-7)	<9(-7)
^{140}La	<2(-6)	6.5 ± 0.3 (-6)	<5(-7)	3.2 ± 0.7 (-7)	<5(-8)	<2(-7)
^{141}Ce	<8(-7)	<7(-7)	<3(-7)	<2(-7)	<9(-8)	<4(-7)
^{143}Ce	<2(-6)	<6(-7)	<3(-7)	<3(-7)	<1(-7)	<4(-7)
^{144}Ce	<4(-6)	<3(-6)	<2(-6)	<9(-7)	<7(-7)	<2(-6)
^{152}Eu	<1(-6)	<9(-7)	<5(-7)	<3(-7)	<2(-7)	<5(-7)
^{154}Eu	<7(-7)	<6(-7)	<9(-7)	<2(-7)	<2(-7)	<3(-7)
^{155}Eu	<1(-6)	<2(-6)	<9(-7)	<7(-7)	<5(-7)	<8(-7)
^{187}W	<2(-6)	<2(-6)	<4(-7)	<5(-7)	<6(-7)	<7(-7)
^{239}Np	<2(-6)	<3(-6)	<9(-7)	<7(-7)	<5(-7)	<7(-7)

Table B.4-5 (cont'd)
RADWASTE COLLECTION FILTER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 11-13-82 1258	11-16-82 1217
^{84}Br	*	<3(-6)
^{131}I	<2(-7)	<1(-7)
^{132}I	<8(-7)	<3(-7)
^{133}I	<4(-7)	<2(-7)
^{134}I	<2(-4)	<2(-6)
^{135}I	<9(-7)	<5(-7)
^{88}Rb	*	<2(-5)
^{89}Rb	*	<7(-6)
^{134}Cs	6.2 ± 0.1 (-6)	1.7 ± 0.5 (-7)
^{136}Cs	<2(-7)	<2(-7)
^{137}Cs	1.07 ± 0.02(-5)	2.2 ± 0.8 (-7)
^{138}Cs	*	<2(-4)
^{139}Cs	*	<2(-4)
^{24}Na	5.34 ± 0.09(-5)	2.9 ± 0.1 (-6)
^{51}Cr	3.2 ± 0.4 (-6)	<2(-6)
^{54}Mn	2.5 ± 0.1 (-6)	5.0 ± 0.7 (-7)
^{56}Mn	<3(-6)	<7(-7)
^{59}Fe	<4(-7)	<2(-7)
^{57}Co	<2(-7)	<2(-7)
^{58}Co	1.24 ± 0.8 (-6)	2.0 ± 0.6 (-7)
^{60}Co	2.40 ± 0.04(-5)	2.4 ± 0.1 (-6)
^{65}Zn	<7(-7)	<5(-7)
^{91}Sr	<8(-7)	<4(-7)
^{91m}Y	<3(-5)	<3(-7)
^{93}Y	<3(-6)	<2(-6)
^{95}Zr	<3(-7)	<3(-7)
^{95}Nb	<2(-7)	<2(-7)

Table B.4-5 (cont'd)
RADWASTE COLLECTION FILTER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time: 11-13-82 1258	Date and Time: 11-16-82 1217
^{99}Mo	<2(-6)	<2(-6)
^{103}Ru	<3(-7)	<3(-7)
^{106}RuD	<2(-6)	<2(-6)
^{110m}Ag	8 ± 1 (-7)	<3(-7)
^{124}Sb	<4(-7)	<4(-7)
^{125}Sb	<6(-7)	<5(-7)
^{129m}Te	<3(-6)	<2(-6)
^{129}Te	<7(-5)	<6(-6)
^{131m}Te	<8(-7)	<5(-7)
^{131}Te	*	<5(-6)
^{132}Te	<2(-7)	<4(-7)
^{139}Ba	<1(-5)	<8(-7)
^{140}Ba	<5(-7)	<4(-7)
^{140}La	<4(-7)	<2(-7)
^{141}Ce	<2(-7)	<3(-7)
^{143}Ce	<3(-7)	<3(-7)
^{144}Ce	<2(-6)	<1(-6)
^{152}Eu	<5(-7)	<4(-7)
^{154}Eu	<7(-7)	<2(-7)
^{155}Eu	<7(-7)	<6(-7)
^{187}W	<6(-7)	<5(-7)
^{239}Np	<8(-7)	<4(-7)

* No measured value.

a. Tank filling.

b. Filter on precoat cycle.

Table B.4-6
RADWASTE COLLECTION DEMINERALIZER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time					
	03-24-82 1016	04-07-82 0934	04-22-82 1206	04-23-82 1045	05-04-82[a] 1030	05-27-82 1102
^{84}Br	*	<3(-5)	<2(-7)	*	*	<3(-4)
^{131}I	2.4 ± 0.6 (-7)	<2(-7)	<1(-8)	1.2 ± 0.4 (-7)	<2(-7)	<3(-7)
^{132}I	<1(-6)	<3(-7)	<2(-8)	*	*	<5(-7)
^{133}I	2 ± 1 (-7)	<1(-7)	<7(-9)	<2(-7)	<5(-7)	<2(-7)
^{134}I	<7(-6)	<2(-6)	<3(-8)	*	*	<9(-6)
^{135}I	<2(-6)	<6(-7)	<3(-8)	<4(-6)	<4(-5)	<8(-7)
^{88}Rb	*	*	<2(-6)	*	*	*
^{89}Rb	*	*	<5(-7)	*	*	*
^{134}Cs	1.9 ± 0.5 (-7)	<4(-7)	1.9 ± 0.3 (-8)	2.7 ± 0.3 (-7)	<2(-7)	<4(-7)
^{136}Cs	<2(-7)	<2(-7)	<2(-8)	<9(-8)	<2(-7)	<2(-7)
^{137}Cs	3.4 ± 0.8 (-7)	<3(-7)	2.0 ± 0.6 (-8)	3.1 ± 0.5 (-6)	<2(-7)	2 ± 1 (-7)
^{138}Cs	*	<2(-5)	<2(-7)	*	*	*
^{139}Cs	*	*	<2(-5)	*	*	*
^{24}Na	<3(-7)	<2(-7)	<2(-8)	<2(-7)	<6(-7)	<2(-7)
^{51}Cr	<2(-6)	<1(-6)	<1(-7)	9 ± 3 (-7)	*	3.4 ± 0.6 (-6)
^{54}Mn	<3(-7)	<3(-7)	1.8 ± 0.5 (-8)	5.9 ± 0.8 (-7)	*	7 ± 1 (-7)
^{56}Mn	<2(-6)	<2(-6)	<8(-8)	<2(-4)	*	<2(-6)
^{59}Fe	<4(-7)	<4(-7)	2.0 ± 0.9 (-8)	<2(-7)	<2(-7)	3 ± 1 (-7)
^{57}Co	<2(-7)	<8(-8)	<2(-8)	<9(-8)	<2(-7)	<2(-7)
^{58}Co	1.1 ± 0.5 (-7)	<2.4(-7)	<2(-8)	<2(-7)	<2(-7)	<3(-7)
^{60}Co	4 ± 1 (-7)	<3(-7)	6 ± 1 (-8)	1.0 ± 0.1 (-6)	<4(-7)	4.9 ± 0.2 (-6)
^{65}Zn	<3(-7)	<4(-7)	<2(-8)	<3(-7)	<4(-7)	<4(-7)
^{91}Sr	<5(-7)	<7(-7)	<3(-8)	<2(-6)	<2(-5)	<7(-7)
^{91m}Y	<8(-6)	<3(-6)	<4(-8)	*	*	<6(-6)
^{93}Y	<2(-6)	<2(-6)	<1(-7)	<5(-6)	<4(-5)	<3(-6)
^{95}Zr	<4(-7)	<2(-7)	<2(-8)	<2(-7)	<2(-7)	<2(-7)

Table B.4-6 (cont'd)
RADWASTE COLLECTION DEMINERALIZER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time					
	03-24-82 1016	04-07-82 0934	04-22-82 1206	04-23-82 1045	05-04-82[a] 1030	05-27-82 1102
^{95}Nb	<6(-8)	<2(-7)	<1(-8)	<6(-8)	<9(-8)	1.9 ± 0.7 (-7)
^{99}Mo	<2(-6)	<7(-7)	<8(-8)	<2(-6)	<2(-6)	<1(-6)
^{103}Ru	<1(-7)	<2(-7)	<1(-8)	<9(-8)	<1(-7)	<2(-7)
^{106}RuD	<7(-7)	<8(-7)	<7(-8)	<2(-6)	<1(-6)	<2(-6)
^{110m}Ag	<2(-7)	<2(-7)	<9(-9)	<6(-8)	<2(-7)	<4(-7)
^{124}Sb	<3(-7)	<3(-7)	<3(-8)	<3(-7)	<2(-7)	<2(-7)
^{125}Sb	<3(-7)	<5(-7)	<4(-8)	<3(-7)	<5(-7)	<7(-7)
^{129m}Te	<2(-6)	<1(-6)	<1(-7)	<2(-6)	<2(-6)	<2(-6)
^{129}Te	<7(-5)	<9(-6)	<2(-7)	*	*	<3(-5)
^{131m}Te	<7(-7)	<7(-7)	<4(-8)	<7(-7)	<4(-6)	<2(-6)
^{131}Te	*	<2(-4)	<4(-7)	*	*	*
^{132}Te	<3(-7)	<5(-7)	<2(-8)	<1(-7)	<3(-7)	<2(-7)
^{139}Ba	<2(-5)	<8(-6)	<1(-7)	*	*	<7(-6)
^{140}Ba	<4(-7)	<7(-7)	<5(-8)	<3(-7)	<6(-7)	<5(-7)
^{140}La	<3(-7)	<3(-7)	<2(-8)	2.4 ± 0.8 (-7)	<5(-7)	3.1 ± 0.8 (-7)
^{141}Ce	<3(-7)	<6(-7)	<4(-8)	<2(-7)	<4(-7)	3 ± 1 (-7)
^{143}Ce	<3(-7)	<4(-7)	<2(-8)	<3(-7)	<6(-7)	<3(-7)
^{144}Ce	<3(-6)	<6(-6)	<1(-7)	<8(-7)	<2(-6)	<1(-6)
^{152}Eu	<4(-7)	<6(-7)	<3(-8)	<2(-7)	<4(-7)	<4(-7)
^{154}Eu	<8(-7)	<5(-7)	<4(-8)	<2(-7)	<2(-7)	<2(-7)
^{155}Eu	<2(-6)	<2(-6)	<5(-8)	<5(-7)	<4(-7)	<6(-7)
^{187}W	<5(-7)	<3(-7)	<5(-8)	<7(-7)	<2(-6)	<6(-7)
^{239}Np	<7(-7)	<2(-6)	<5(-8)	<6(-7)	<9(-7)	<6(-7)

Table B.4-6 (cont'd)
RADWASTE COLLECTION DEMINERALIZER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 10-26-82 1116	11-11-82 1118	11-13-82 1300
^{84}Br	*	*	*
^{131}I	<2(-7)	<4(-7)	1(-7)
^{132}I	*	<2(-6)	<2(-6)
^{133}I	<3(-7)	<6(-7)	<2(-7)
^{134}I	*	<2(-5)	*
^{135}I	<2(-6)	<2(-6)	<8(-7)
^{88}Rb	*	*	*
^{89}Rb	*	*	*
^{134}Cs	<1(-7)	<4(-7)	3.8 ± 0.4 (-7)
^{136}Cs	<9(-8)	<2(-7)	<2(-7)
^{137}Cs	<2(-7)	<4(-7)	6.0 ± 0.6 (-7)
^{138}Cs	*	*	*
^{139}Cs	*	*	*
^{24}Na	<2(-7)	<1(-7)	<9(-8)
^{51}Cr	<7(-7)	<2(-6)	2.1 ± 0.6 (-6)
^{54}Mn	<1(-7)	<3(-7)	1.6 ± 0.1 (-6)
^{56}Mn	<1(-7)	<2(-6)	<4(-6)
^{59}Fe	<2(-7)	<4(-7)	2.9 ± 0.8 (-7)
^{57}Co	<2(-7)	<4(-7)	<7(-8)
^{58}Co	<8(-8)	<3(-7)	2.8 ± 0.8 (-7)
^{60}Co	<2(-7)	<6(-7)	5.8 ± 0.2 (-6)
^{65}Zn	<2(-7)	<4(-7)	<2(-7)
^{91}Sr	<9(-7)	<2(-6)	<5(-7)
^{91m}Y	*	<3(-5)	*
^{93}Y	<3(-6)	<4(-6)	<2(-6)
^{95}Zr	<2(-7)	<6(-7)	<2(-7)

Table B.4-6 (cont'd)
RADWASTE COLLECTION DEMINERALIZER EFFLUENT
(microcuries/gram)

Nuclide	Date and Time 10-26-82 1116	11-11-82 1118	11-13-82 1300
^{95}Nb	<2(-7)	<4(-7)	<2(-7)
^{99}Mo	<9(-7)	<2(-6)	<8(-7)
^{103}Ru	<9(-8)	<5(-7)	<8(-8)
^{106}RuD	<1(-6)	<5(-6)	<1(-6)
^{110m}Ag	<1(-7)	<3(-7)	1.1 ± 0.1 (-6)
^{124}Sb	<2(-7)	<4(-7)	<4(-8)
^{125}Sb	<3(-7)	<2(-6)	<4(-7)
^{129m}Te	<1(-6)	<2(-6)	<2(-6)
^{129}Te	*	<6(-5)	<4(-4)
^{131m}Te	<6(-7)	<2(-6)	<5(-7)
^{131}Te	*	*	*
^{132}Te	<2(-7)	<3(-7)	<8(-8)
^{139}Ba	<4(-4)	<2(-5)	<6(-5)
^{140}Ba	<3(-7)	<8(-7)	<4(-7)
^{140}La	<9(-8)	<3(-7)	1.8 ± 0.4 (-7)
^{141}Ce	<3(-7)	<5(-7)	<2(-7)
^{143}Ce	<3(-7)	<9(-7)	<3(-7)
^{144}Ce	<9(-7)	<2(-6)	<7(-7)
^{152}Eu	<4(-7)	<7(-7)	<3(-7)
^{154}Eu	<2(-7)	<5(-7)	<2(-7)
^{155}Eu	<5(-7)	<7(-7)	<4(-7)
^{187}W	<5(-7)	<8(-7)	<4(-7)
^{239}Np	<5(-7)	<2(-6)	<4(-7)

* No value measured.

a. Auxiliary serge demineralizer effluent.

Table B.4-7
RADWASTE SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time					
	"A" 03-24-82 1018	"B" 03-24-82 1020	"B" 03-31-82 1010	"B" 04-07-82 0944	"B" 05-06-82 1112	"B" 08-12-82 1327
^{84}Br	*	*	<4(-5)	<4(-4)	*	*
^{131}I	<2(-7)	<2(-7)	<8(-8)	<2(-7)	<8(-8)	<3(-7)
^{132}I	<5(-7)	<5(-7)	<3(-7)	<8(-7)	*	*
^{133}I	<2(-7)	<3(-7)	<2(-7)	<4(-7)	<6(-7)	<7(-6)
^{134}I	<9(-6)	<1(-5)	<3(-6)	<3(-6)	*	*
^{135}I	<1(-6)	<2(-6)	<5(-7)	<4(-7)	<4(-5)	*
^{88}Rb	*	*	*	*	*	*
^{89}Rb	*	*	*	*	*	*
^{134}Cs	<4(-7)	<2(-7)	5.7 ± 0.4 (-7)	<3(-7)	3.0 ± 0.6 (-7)	6.1 ± 0.6 (-7)
^{136}Cs	<3(-7)	<2(-7)	<7(-8)	<1(-7)	<1(-7)	<3(-7)
^{137}Cs	3 ± 1 (-7)	2.0 ± 0.7 (-7)	7.0 ± 0.5 (-7)	<2(-7)	5.5 ± 0.9 (-7)	1.0 ± 0.08(-6)
^{138}Cs	*	*	3.8(-5)	<3(-5)	*	*
^{139}Cs	*	*	*	*	*	*
^{24}Na	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<7(-7)	<4(-6)
^{51}Cr	<2(-6)	<2(-6)	<9(-7)	<2(-6)	<2(-6)	8.8 ± 0.6 (-6)
^{54}Mn	<2(-7)	<5(-7)	4.2 ± 0.5 (-7)	1.1 ± 0.1 (-6)	<1(-7)	1.69 ± 0.03(-5)
^{56}Mn	<3(-6)	<5(-6)	<7(-7)	<2(-6)	*	*
^{59}Fe	<4(-7)	<4(-7)	<2(-7)	<3(-7)	<1(-7)	2.1 ± 0.1 (-6)
^{57}Co	<2(-7)	<2(-7)	<1(-7)	<3(-7)	<2(-7)	<1(-7)
^{58}Co	<4(-7)	<3(-7)	2.3 ± 0.4 (-7)	1.7 ± 0.6 (-7)	<6(-8)	1.70 ± 0.09(-6)
^{60}Co	<5(-7)	5 ± 1 (-7)	4.7 ± 0.6 (-7)	1.2 ± 0.1 (-6)	<3(-7)	4.40 ± 0.07(-5)
^{65}Zn	<4(-7)	<4(-7)	<2(-7)	<2(-7)	<2(-7)	1.9 ± 0.4 (-6)
^{91}Sr	<9(-7)	<5(-7)	<3(-7)	<4(-7)	<1(-5)	*
^{91m}Y	<2(-5)	<1(-5)	<2(-6)	<2(-6)	*	*
^{93}Y	<3(-6)	<4(-6)	<3(-7)	<2(-6)	<3(-5)	<1(-3)

Table B.4-7 (cont'd)
RADWASTE SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time					
	"A" 03-24-82 1018	"B" 03-24-82 1020	"B" 03-31-82 1010	"B" 04-07-82 0944	"B" 05-06-82 1112	"B" 08-12-82 1327
^{95}Zr	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<3(-7)
^{95}Nb	<4(-7)	<1(-7)	<5(-8)	<2(-7)	<8(-8)	<7(-7)
^{99}Mo	<8(-7)	<7(-7)	<5(-7)	<2(-6)	<9(-7)	<4(-6)
^{103}Ru	<3(-7)	<9(-8)	<5(-8)	<2(-7)	<8(-8)	<4(-7)
^{106}RuD	<2(-6)	<1(-6)	<7(-7)	<1(-6)	<6(-7)	<2(-6)
^{110m}Ag	<2(-7)	<7(-8)	<1(-7)	<4(-8)	<1(-7)	2.1 ± 0.2 (-6)
^{124}Sb	<3(-7)	<3(-7)	<2(-7)	<4(-7)	<2(-7)	<8(-8)
^{125}Sb	<5(-7)	<3(-7)	<3(-7)	<6(-7)	<2(-7)	<4(-7)
^{129m}Te	<1(-6)	<2(-6)	<1(-6)	<2(-6)	<7(-7)	<2(-6)
^{129}Te	<4(-7)	<8(-5)	<8(-6)	<3(-5)	*	*
^{131m}Te	<8(-7)	<2(-6)	<4(-7)	<7(-7)	<2(-6)	<8(-6)
^{131}Te	*	*	<3(-4)	<4(-4)	*	*
^{132}Te	<2(-7)	<2(-7)	<9(-8)	<4(-7)	<2(-7)	<2(-7)
^{139}Ba	<2(-5)	<9(-6)	<3(-6)	<6(-6)	*	*
^{140}Ba	<4(-7)	<4(-7)	<4(-7)	<4(-7)	<3(-7)	<6(-7)
^{140}La	<2(-7)	<2(-7)	<7(-8)	<2(-7)	<2(-7)	<3(-7)
^{141}Ce	<4(-7)	<5(-7)	<2(-7)	<5(-7)	<2(-7)	<2(-7)
^{143}Ce	<3(-7)	<3(-7)	<2(-7)	<3(-7)	<5(-7)	<2(-6)
^{144}Ce	<2(-6)	<2(-6)	<9(-7)	<2(-6)	<1(-6)	<8(-7)
^{152}Eu	<3(-7)	<4(-7)	<2(-7)	<5(-7)	<3(-7)	<4(-7)
^{154}Eu	<5(-7)	<4(-7)	<3(-7)	<5(-7)	<3(-7)	<4(-7)
^{155}Eu	<9(-7)	<6(-7)	<4(-7)	<1(-6)	<3(-7)	<7(-7)
^{187}W	<8(-7)	<3(-6)	<3(-7)	<5(-7)	<2(-6)	<8(-6)
^{239}Np	<1(-6)	<6(-7)	<4(-7)	<7(-7)	<5(-7)	<2(-6)

Table B.4-7 (cont'd)
RADWASTE SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time				
	"A" 10-22-82 1030	"A" 10-25-82 1420	"B" 11-11-82 1115	"B" 11-13-82 1255	"B" 11-16-82 1215
^{84}Br	<5(-5)	*	*	<7(-6)	<6(-6)
^{131}I	<2(-7)	<2(-7)	<3(-7)	<2(-7)	<2(-7)
^{132}I	<4(-7)	*	*	<2(-7)	<5(-7)
^{133}I	<2(-7)	<7(-7)	<5(-7)	<8(-8)	<3(-7)
^{134}I	<3(-5)	*	*	<1(-5)	<2(-6)
^{135}I	<3(-7)	<2(-5)	<7(-6)	<4(-7)	<4(-7)
^{88}Rb	*	*	*	*	<1(-5)
^{89}Rb	*	*	*	*	<2(-5)
^{134}Cs	3.2 ± 0.6 (-7)	<2(-7)	<3(-7)	<2(-7)	2.0 ± 0.1 (-6)
^{136}Cs	<2(-7)	<2(-7)	<3(-7)	<1(-7)	<4(-7)
^{137}Cs	3.3 ± 0.6 (-7)	2.3 ± 0.7 (-7)	<3(-7)	2.7 ± 0.5 (-7)	3.6 ± 0.2 (-6)
^{138}Cs	<2(-5)	*	*	<2(-6)	<2(-6)
^{139}Cs	*	*	*	*	<5(-4)
^{24}Na	<2(-7)	<3(-7)	<4(-7)	<2(-7)	<8(-8)
^{51}Cr	2.7 ± 0.4 (-6)	<2(-6)	<3(-6)	1.6 ± 0.3 (-6)	8 ± 1 (-6)
^{54}Mn	2.6 ± 0.1 (-6)	<2(-7)	6 ± 1 (-7)	8.8 ± 0.6 (-7)	1.34 ± 0.04(-5)
^{56}Mn	<6(-7)	*	<4(-4)	<3(-7)	<6(-7)
^{59}Fe	<6(-7)	<3(-7)	<3(-7)	<2(-7)	1.6 ± 0.2 (-6)
^{57}Co	<3(-7)	<2(-7)	<3(-7)	<9(-8)	<2(-7)
^{58}Co	3.2 ± 0.7 (-7)	<2(-7)	2.8 ± 0.9 (-7)	2.1 ± 0.4 (-7)	2.7 ± 0.3 (-6)
^{60}Co	6.2 ± 0.2 (-6)	<5(-7)	2.2 ± 0.2 (-6)	3.7 ± 0.1 (-6)	5.04 ± 0.07(-5)
^{65}Zn	<4(-7)	<5(-7)	<3(-7)	<3(-7)	1.5 ± 0.4 (-6)
^{91}Sr	<5(-7)	<9(-6)	<3(-6)	<3(-7)	<1(-6)
^{91m}Y	<3(-6)	*	*	<8(-7)	<7(-7)
^{93}Y	<3(-6)	<5(-5)	<2(-5)	<2(-6)	<3(-6)

Table B.4-7 (cont'd)
RADWASTE SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time: "A" 10-22-82 1030	"A" 10-25-82 1420	"B" 11-11-82 1115	"B" 11-13-82 1255	"B" 11-16-82 1215
^{95}Zr	<2(-7)	<2(-7)	<4(-7)	<2(-7)	<7(-7)
^{95}Nb	<3(-7)	<9(-8)	<2(-7)	<1(-7)	<4(-7)
^{99}Mo	<1(-6)	<1(-6)	<2(-6)	<8(-7)	<3(-6)
^{103}Ru	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<3(-7)
^{106}RuD	<2(-6)	<8(-7)	<2(-6)	<1(-6)	<3(-6)
^{110m}Ag	6 ± 1 (-7)	<2(-7)	<2(-7)	4.8 ± 0.6 (-7)	1.8 ± 0.3 (-6)
^{124}Sb	<2(-7)	<2(-7)	<4(-7)	<7(-8)	<3(-7)
^{125}Sb	<4(-7)	<6(-7)	<6(-7)	<2(-7)	<9(-7)
^{129m}Te	<2(-6)	<2(-6)	<2(-6)	<2(-6)	<3(-6)
^{129}Te	<1(-5)	*	*	<7(-6)	<1(-5)
^{131m}Te	<6(-7)	<2(-6)	<2(-6)	<4(-7)	<2(-6)
^{131}Te	<2(-4)	*	*	<4(-5)	<9(-6)
^{132}Te	<4(-7)	<2(-7)	<2(-7)	<1(-7)	<3(-7)
^{139}Ba	<5(-6)	*	*	<2(-6)	<2(-6)
^{140}Ba	<5(-7)	<7(-7)	<2(-6)	<4(-7)	<9(-7)
^{140}La	<3(-7)	<3(-7)	<3(-7)	2.8 ± 0.4 (-7)	<2(-7)
^{141}Ce	<3(-7)	<2(-7)	<4(-7)	<2(-7)	<4(-7)
^{143}Ce	<3(-7)	<5(-7)	<6(-7)	<4(-7)	<8(-7)
^{144}Ce	<2(-6)	<7(-7)	<3(-6)	<8(-7)	<2(-6)
^{152}Eu	<4(-7)	<3(-7)	<6(-7)	<2(-7)	<2(-6)
^{154}Eu	<3(-7)	<2(-7)	<3(-7)	<2(-7)	<5(-7)
^{155}Eu	<8(-7)	<5(-7)	<8(-7)	<5(-7)	<8(-7)
^{187}W	<4(-7)	<2(-6)	<2(-6)	<3(-7)	<1(-6)
^{239}Np	<8(-7)	<7(-7)	<1(-6)	<3(-7)	<1(-6)

* Value not measured.

Table B.4-8
FLOOR DRAIN SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time					
	"B" 03-26-82 1002	"B" 03-31-82 0940	"B" 04-07-82 0937	"B" 04-09-82 1015	"B" 04-21-82 1355	"A" 05-06-82 1105
^{84}Br	<2(-6)	<5(-6)	<3(-5)	*	<4(-6)	*
^{131}I	8.80 ± 0.8 (-7)	5.2 ± 0.7 (-7)	<3(-7)	7 ± 1 (-7)	1.2 ± 0.2 (-6)	<2(-7)
^{132}I	<2(-7)	<3(-7)	<5(-7)	*	<5(-7)	*
^{133}I	<3(-7)	<2(-7)	3 ± 1 (-7)	2.8 ± 0.6 (-6)	3.6 ± 0.2 (-6)	<2(-7)
^{134}I	<2(-6)	<9(-6)	<4(-6)	*	<6(-7)	*
^{135}I	<5(-7)	<5(-7)	<2(-6)	1.5 ± 0.3 (-5)	1.4 ± 0.3 (-6)	<4(-6)
^{88}Rb	<6(-6)	<6(-4)	*	*	<7(-6)	*
^{89}Rb	<3(-6)	<2(-4)	*	*	<6(-6)	*
^{134}Cs	5.3 ± 0.8 (-7)	4.9 ± 0.7 (-7)	2.0 ± 0.2 (-6)	1.48 ± 0.09(-6)	3.6 ± 0.9 (-7)	<8(-8)
^{136}Cs	<2(-7)	<3(-7)	<3(-7)	<4(-7)	<3(-7)	<2(-7)
^{137}Cs	3 ± 1 (-7)	7 ± 2 (-7)	2.8 ± 0.2 (-6)	2.4 ± 0.2 (-6)	<4(-7)	1.8 ± 0.5 (-7)
^{138}Cs	<6(-7)	<6(-6)	<2(-5)	*	<7(-7)	*
^{139}Cs	<7(-5)	*	*	*	<2(-4)	*
^{24}Na	<2(-7)	<1(-7)	4.0 ± 0.3 (-6)	4.8 ± 0.4 (-6)	<2(-7)	<3(-7)
^{51}Cr	1.46 ± 0.08(-5)	1.3 ± 0.2 (-5)	8.7 ± 0.9 (-6)	5.2 ± 0.9 (-5)	3.1 ± 0.1 (-4)	<7(-7)
^{54}Mn	2.6 ± 0.2 (-6)	1.3 ± 0.2 (-6)	2.8 ± 0.2 (-6)	3.8 ± 0.1 (-5)	5.8 ± 0.2 (-7)	2.1 ± 0.1 (-6)
^{56}Mn	<6(-7)	<2(-6)	<3(-6)	*	<9(-7)	*
^{59}Fe	8 ± 1 (-7)	<7(-7)	<7.0(-7)	<3(-7)	7 ± 2 (-7)	<5(-7)
^{57}Co	<2(-7)	<4(-7)	<6(-7)	<2(-7)	<3(-7)	<4(-7)
^{58}Co	5.6 ± 0.8 (-7)	4.0 ± 0.8 (-7)	4 ± 1 (-7)	6 ± 1 (-7)	5 ± 1 (-7)	3.7 ± 0.4 (-7)
^{60}Co	4.5 ± 0.2 (-6)	3.0 ± 0.2 (-6)	5.3 ± 0.3 (-6)	3.42 ± 0.05(-4)	2.95 ± 0.05(-5)	4.2 ± 0.1 (-6)
^{65}Zn	<3(-7)	<4(-7)	<8(-7)	5.3 ± 0.5 (-6)	<7(-7)	2.9 ± 0.9 (-7)
^{91}Sr	<4(-7)	<2(-4)	<7(-7)	<1(-5)	<2(-6)	<3(-6)
^{91m}Y	<4(-7)	<1(-6)	<4(-6)	*	<3(-4)	*
^{93}Y	<2(-6)	<3(-4)	<3(-6)	<2(-5)	<7(-6)	<9(-6)

Table B.4-8 (cont'd)
FLOOR DRAIN SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time "B" 03-26-82 1002	"B" 03-31-82 0940	"B" 04-07-82 0937	"B" 04-09-82 1015	"B" 04-21-82 1355	"A" 05-06-82 1105
^{95}Zr	<2(-7)	<3(-7)	<3(-7)	5 ± 2 (-7)	<4(-7)	<3(-7)
^{95}Nb	<2(-7)	<3(-7)	<2(-7)	<3(-7)	<5(-7)	<2(-7)
^{99}Mo	<7(-7)	<3(-6)	<3(-6)	<5(-6)	4.7 ± 0.9 (-6)	<1(-6)
^{103}Ru	<2(-7)	<2(-7)	<2(-7)	<4(-7)	5 ± 2 (-7)	<1(-7)
^{106}RuD	<1(-6)	<2(-6)	<2(-6)	<5(-6)	<2(-6)	<6(-7)
^{110m}Ag	5 ± 1 (-7)	5 ± 1 (-7)	4 ± 1 (-7)	1.0 ± 0.2 (-6)	7 ± 2 (-7)	<1(-7)
^{124}Sb	<3(-7)	<6(-7)	<5(-7)	<2(-7)	<4(-7)	<2(-7)
^{125}Sb	<3(-7)	<5(-7)	<6(-7)	<8(-7)	<1(-6)	<3(-7)
^{129m}Te	<2(-6)	<2(-6)	<4(-6)	<3(-6)	<3(-6)	<7(-7)
^{129}Te	<3(-6)	<2(-5)	<3(-5)	*	<6(-6)	*
^{131m}Te	<7(-7)	<6(-6)	<9(-7)	<3(-6)	<2(-6)	<7(-7)
^{131}Te	<3(-6)	<3(-5)	<3(-4)	*	<5(-6)	*
^{132}Te	<2(-7)	<5(-7)	<5(-7)	<2(-7)	<3(-7)	<7(-8)
^{139}Ba	<8(-7)	<2(-6)	<6(-6)	*	<2(-6)	*
^{140}Ba	<9(-7)	<2(-6)	<2(-6)	<2(-6)	<1(-6)	<3(-7)
^{140}La	9 ± 1 (-7)	2.9 ± 0.8 (-6)	4 ± 2 (-7)	2.0 ± 0.1 (-6)	4.6 ± 0.2 (-6)	<2(-7)
^{141}Ce	<4(-7)	<4(-7)	<6(-7)	<6(-7)	5 ± 2 (-7)	<1(-7)
^{143}Ce	<4(-7)	<2(-6)	<5(-7)	<7(-7)	<4(-7)	<4(-7)
^{144}Ce	<9(-7)	<3(-6)	<3(-6)	<1(-6)	<3(-6)	<5(-7)
^{152}Eu	<4(-7)	<5(-7)	<8(-7)	<3(-7)	<5(-7)	<2(-7)
^{154}Eu	<5(-7)	<8(-7)	<7(-7)	<6(-7)	<8(-7)	<2(-7)
^{155}Eu	<5(-7)	<9(-7)	<1(-6)	<6(-7)	<2(-6)	<3(-7)
^{187}W	<4(-7)	<5(-6)	<6(-7)	<2(-6)	<1(-6)	<6(-7)
^{239}Np	<6(-7)	<2(-6)	<1(-6)	<1(-6)	2.9 ± 0.5 (-6)	<3(-7)

Table B.4-8 (cont'd)
FLOOR DRAIN SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time "B" 06-08-82 1111	Date and Time "A" 07-29-82 0810
^{84}Br	*	*
^{131}I	<5(-7)	<1(-7)
^{132}I	*	<2(-6)
^{133}I	<5(-7)	<2(-7)
^{134}I	*	<1(-3)
^{135}I	<6(-6)	<8.8(-7)
^{88}Rb	*	*
^{89}Rb	*	*
^{134}Cs	2.3 ± 0.1 (-6)	5.7 ± 0.1 (-6)
^{136}Cs	<3(-7)	<2(-7)
^{137}Cs	2.7 ± 0.1 (-6)	8.3 ± 0.1 (-6)
^{138}Cs	*	*
^{139}Cs	*	*
^{24}Na	<2(-7)	<6(-8)
^{51}Cr	1.2 ± 0.1 (-5)	1.26 ± 0.04(-5)
^{54}Mn	3.63 ± 0.06(-5)	2.76 ± 0.05(-5)
^{56}Mn	*	< 1(-6)
^{59}Fe	7.2 ± 0.2 (-6)	2.1 ± 0.1 (-6)
^{57}Co	<1(-7)	<2(-7)
^{58}Co	7.3 ± 0.40(-6)	4.3 ± 0.1 (-6)
^{60}Co	8.6 ± 0.2 (-5)	8.0 ± 0.1 (-5)
^{65}Zn	2.7 ± 0.3 (-6)	2.0 ± 0.2 (-6)
^{91}Sr	<6(-6)	<9(-7)
^{91m}Y	*	<2(-4)
^{93}Y	<2(-5)	<3(-6)

Table B.4-8 (cont'd)
FLOOR DRAIN SAMPLE TANKS
(microcuries/gram)

Nuclide	Date and Time "B" 06-08-82 1111	Date and Time "A" 07-29-82 0810
^{95}Zr	<6(-7)	<4(-7)
^{95}Nb	5 ± 1 (-7)	<5(-7)
^{99}Mo	<2(-6)	<1(-6)
^{103}Ru	3 ± 1 (-7)	<2(-7)
^{106}RuD	<3(-6)	<2(-6)
^{110m}Ag	<4(-7)	1.0 ± 0.1 (-6)
^{124}Sb	<2(-7)	<2(-7)
^{125}Sb	<6(-7)	<3(-7)
^{129m}Te	<4(-6)	<2(-6)
^{129}Te	*	<2(-4)
^{131m}Te	<2(-6)	<8(-7)
^{131}Te	*	*
^{132}Te	<2(-7)	<2(-7)
^{139}Ba	*	<2(-5)
^{140}Ba	<7(-7)	<5(-7)
^{140}La	<9(-8)	<7(-8)
^{141}Ce	<3(-7)	<2(-7)
^{143}Ce	<5(-7)	<4(-7)
^{144}Ce	<2(-6)	<6(-7)
^{152}Eu	<5(-7)	<3(-7)
^{154}Eu	<5(-7)	<2(-7)
^{155}Eu	<5(-7)	<5(-7)
^{187}W	<2(-6)	<6(-7)
^{239}Np	<5(-7)	<3(-7)

* Value not measured.

Table B.4-9
DETERGENT DRAIN TANKS
(microcuries/gram)

Nuclide	Date and Time "B" 05-06-82 1044	"B" 07-15-82 0320	"B" 07-25-82 1520
^{84}Br	<2(-4)	*	*
^{131}I	<2(-7)	<2(-7)	<2(-7)
^{132}I	<6(-7)	<2(-6)	*
^{133}I	<2(-7)	<2(-7)	<2(-7)
^{134}I	<6(-6)	<3(-4)	*
^{135}I	<8(-7)	<5(-7)	<3(-6)
^{88}Rb	*	*	*
^{89}Rb	*	*	*
^{134}Cs	1.33 ± 0.07(-6)	1.51 ± 0.03(-5)	1.34 ± 0.06(-6)
^{136}Cs	<2(-7)	<2(-7)	<2(-7)
^{137}Cs	1.8 ± 0.1 (-6)	2.86 ± 0.06(-5)	2.19 ± 0.08(-6)
^{138}Cs	<9(-5)	*	*
^{139}Cs	*	*	*
^{24}Na	<2(-7)	<4(-8)	<9(-8)
^{51}Cr	2.0 ± 0.4 (-6)	1.9 ± 0.8 (-6)	4.3 ± 0.1 (-5)
^{54}Mn	1.3 ± 0.1 (-6)	5.2 ± 0.1 (-6)	7.2 ± 0.1 (-6)
^{56}Mn	<2(-6)	<3(-6)	<8(-5)
^{59}Fe	<4(-7)	<4(-7)	6.2 ± 0.7 (-7)
^{57}Co	<2(-7)	<1(-7)	<1(-7)
^{58}Co	1.8 ± 0.6 (-7)	1.2 ± 0.1 (-6)	2.7 ± 0.1 (-6)
^{60}Co	3.6 ± 0.2 (-6)	1.64 ± 0.02(-5)	7.4 ± 0.2 (-6)
^{65}Zn	<3(-7)	<9(-7)	<4(-7)
^{91}Sr	<8(-7)	<7(-7)	<2(-6)
^{91m}Y	<6(-6)	<2(-4)	*
^{93}Y	<3(-6)	<3(-6)	<7(-6)

Table B.4-9 (cont'd)
DETERGENT DRAIN TANKS
(microcuries/gram)

Nuclide	Date and Time "B" 05-06-82 1044	"B" 07-15-82 0320	"B" 07-25-82 1520
^{95}Zr	<3(-7)	<2(-7)	<2(-7)
^{95}Nb	<1(-7)	<3(-7)	<7(-8)
^{99}Mo	<9(-7)	<2(-6)	<8(-2)
^{103}Ru	<2(-7)	<2(-7)	<2(-7)
^{106}RuD	<2(-6)	<2(-6)	<8(-7)
^{110m}Ag	<2(-7)	<3(-7)	9.1 ± 0.9 (-7)
^{124}Sb	<2(-7)	<2(-7)	<2(-7)
^{125}Sb	<3(-7)	<1(-6)	<3(-7)
^{129m}Te	<2(-6)	<2(-6)	<1(-6)
^{129}Te	<4(-5)	<4(-4)	*
^{131m}Te	<9(-7)	<9(-7)	<8(-7)
^{131}Te	*	*	*
^{132}Te	2(-7)	<2(-7)	<2(-7)
^{139}Ba	<6(-6)	<4(-5)	*
^{140}Ba	<6(-7)	<7(-7)	<2(-6)
^{140}La	<3(-7)	<2(-7)	<6(-8)
^{141}Ce	<2(-7)	<3(-7)	<2(-7)
^{143}Ce	<3(-7)	<3(-7)	<3(-7)
^{144}Ce	<1(-6)	<8(-7)	<8(-7)
^{152}Eu	<3(-7)	<4(-7)	<3(-7)
^{154}Eu	<3(-7)	<4(-7)	<2(-7)
^{155}Eu	<4(-7)	<5(-7)	<4(-7)
^{187}W	<5(-7)	<7(-7)	<7(-7)
^{239}Np	<4(-7)	<5(-7)	<4(-7)

* Value not measured.

Table B.4-10
MISCELLANEOUS TANKS
(microcuries/gram)

Nuclide	Radwaste Collection Tank Sump (1/4 resin) 05-03-82 [a] 1025	Radwaste Floor Drain Sump 05-06-82 1049	Unit 2 Condensate Storage Tank 04-06-82 1030
	Date and Time		
^{84}Br	<2(-2)	<4(-5)	*
^{131}I	4.1 ± 0.1 (-3)	2.60 ± 0.04(-5)	<3(-7)
^{132}I	<8(-4)	<1(-5)	*
^{133}I	<1(-3)	<1(-6)	*
^{134}I	<7(-2)	<1(-5)	*
^{135}I	<1(-3)	<3(-6)	*
^{88}Rb	<8(-2)	<1(-4)	*
^{89}Rb	<3(-1)	<3(-4)	*
^{134}Cs	1.64 ± 0.02(-1)	9.9 ± 0.1 (-5)	5.4 ± 0.2 (-6)
^{136}Cs	<5(-4)	5.8 ± 0.4 (-6)	<3(-7)
^{137}Cs	2.13 ± 0.06(-1)	1.2 ± 0.1 (-4)	1.23 ± 0.04(-5)
^{138}Cs	4(-3)	<5(-6)	*
^{139}Cs	*	*	*
^{24}Na	<1(-4)	9.9 ± 0.4 (-6)	*
^{51}Cr	2.3 ± 0.09(-1)	6.77 ± 0.04(-4)	<2(-6)
^{54}Mn	2.62 ± 0.08(-1)	5.4 ± 0.1 (-4)	<3(-7)
^{56}Mn	<8(-4)	<2(-6)	*
^{59}Fe	2.44 ± 0.04(-2)	7.5 ± 0.2 (-5)	<5(-7)
^{57}Co	2 ± 1 (-4)	<8(-7)	<2(-7)
^{58}Co	4.71 ± 0.09(-2)	7.7 ± 0.2 (-5)	<3(-7)
^{60}Co	4.53 ± 0.07(-1)	1.05 ± 0.02(-3)	5.4 ± 0.2 (-6)
^{65}Zn	1.37 ± 0.05(-2)	3.1 ± 0.1 (-5)	<3(-7)
^{91}Sr	<2(-3)	<4(-6)	*

Table B.4-10 (cont'd)
MISCELLANEOUS TANKS
(microcuries/gram)

Nuclide	Radwaste Collection Tank Sump (1/4 resin) 05-03-82 a 1025	Radwaste Floor Drain Sump 05-06-82 1049	Unit 2 Condensate Storage Tank 04-06-82 1030
	Date and Time		
^{91m}Y	<3(-3)	<6(-6)	*
^{93}Y	<4(-3)	<8(-6)	*
^{95}Zr	<9(-4)	<5(-6)	<3(-7)
^{95}Nb	<2(-4)	<3(-6)	<2(-7)
^{99}Mo	<4(-3)	<6(-6)	<2(-5)
^{103}Ru	<2(-3)	<2(-6)	<2(-7)
^{106}RuD	<4(-3)	<1(-5)	<3(-6)
^{110m}Ag	5.9 ± 0.3 (-3)	1.1 ± 0.1 (-5)	<2(-7)
^{124}Sb	<7(-4)	<3(-6)	<3(-7)
^{125}Sb	<9(-4)	<4(-6)	<4(-7)
^{129m}Te	<5(-3)	<2(-5)	<2(-6)
^{129}Te	<2(-2)	<4(-5)	*
^{131m}Te	<2(-3)	<5(-6)	<9(-5)
^{131}Te	<4(-2)	<8(-5)	*
^{132}Te	<3(-4)	<1(-6)	<9(-7)
^{139}Ba	<2(-3)	<5(-6)	*
^{140}Ba	4 ± 1 (-3)	<2(-5)	<1(-6)
^{140}La	6.1 ± 0.1 (-3)	1.27 ± 0.03(-5)	<6(-6)
^{141}Ce	<2(-3)	<4(-6)	<6(-7)
^{143}Ce	<8(-4)	<3(-6)	<2(-5)
^{144}Ce	<3(-3)	<5(-6)	<2(-6)
^{152}Eu	<2(-3)	<2(-6)	<4(-7)
^{154}Eu	<7(-4)	<3(-6)	<5(-7)
^{155}Eu	<2(-3)	<4(-6)	<5(-7)

Table B.4-10 (cont'd)
MISCELLANEOUS TANKS
(microcuries/gram)

Nuclide	Date and Time: Radwaste Collection Tank Sump (1/4 resin) 05-03-82 [a] 1025	Radwaste Floor Drain Sump 05-06-82 1049	Unit 2 Condensate Storage Tank 04-06-82 1030
^{187}W	<2(-3)	<4(-6)	<3(-4)
^{239}Np	<2(-3)	<6(-6)	<6(-6)

* Value not measured.

a. High radionuclide concentrations may result from their presence on resin contained in the bottle.

Table B.4-11
FLOOR DRAIN SYSTEM FILTERED SAMPLES
FLOOR DRAIN COLLECTION TANK
04/07/82--1030
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	1.32 ± 0.06(-6)	1.30 ± 0.09(-5)	1.33 ± 0.09(-5)	1.3 ± 0.1 (-5)
^{132}I	<8(-7)	<4(-6)	*	3.1 ± 0.4 (-6)
^{133}I	2.0 ± 0.2 (-6)	3.3 ± 0.1 (-5)	3.5 ± 0.1 (-5)	3.47 ± 0.09(-5)
^{135}I	1.1 ± 0.4 (-6)	2.6 ± 0.2 (-5)	2.7 ± 0.2 (-5)	2.6 ± 0.1 (-5)
^{134}Cs	2.41 ± 0.09(-6)	8.1 ± 0.1 (-5)	8.3 ± 0.1 (-5)	8.16 ± 0.08(-5)
^{137}Cs	3.70 ± 0.13(-6)	1.05 ± 0.02(-4)	1.09 ± 0.02(-4)	1.06 ± 0.03(-4)
^{24}Na	<2(-7)	6.2 ± 0.2 (-5)	*	6.4 ± 0.2 (-5)
^{51}Cr	1.56 ± 0.01(-4)	4.93 ± 0.64(-5)	2.00 ± 0.06(-4)	1.77 ± 0.04(-4)
^{54}Mn	3.96 ± 0.04(-5)	4.4 ± 0.2 (-5)	8.3 ± 0.2 (-5)	7.8 ± 0.1 (-5)
^{59}Fe	9.2 ± 0.3 (-6)	<2(-7)	*	8.7 ± 0.8 (-5)
^{58}Co	5.9 ± 0.5 (-6)	8.3 ± 0.6 (-6)	1.42 ± 0.08(-5)	1.43 ± 0.10(-5)
^{60}Co	5.8 ± 0.2 (-6)	6.9 ± 0.1 (-5)	7.5 ± 0.1 (-5)	1.20 ± 0.02(-4)
^{65}Zn	2.0 ± 0.2 (-6)	2 ± 1 (-6)	4 ± 1 (-6)	<3(-6)
^{91}Sr	<2(-6)	1.1 ± 0.2 (-5)	*	1.3 ± 0.1 (-5)
^{91m}Y	3.4 ± 0.5 (-5)	<3(-5)	*	7 ± 2 (-6)
^{93}Y	1.4 ± 0.6 (-6)	<1.4(-5)	*	<9(-6)
^{103}Ru	2.04 ± 0.97(-7)	1.0 ± 0.5 (-6)	1.2 ± 0.5 (-6)	<2(-6)
^{110m}Ag	9 ± 1 (-7)	<1(-6)	*	1.3 ± 0.5 (-6)
^{140}Ba	5.6 ± 0.3 (-6)	6 ± 2 (-6)	1.2 ± 0.2 (-5)	7 ± 4 (-6)
^{140}La	6.8 ± 0.1 (-6)	<9.9(-7)	*	6.6 ± 0.4 (-6)
^{141}Ce	2.8 ± 0.4 (-7)	<1.4(-6)	*	<2(-4)

* Value not measured.

Table 8.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "B"
04/07/82--1026
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	3.19 ± 0.08(-6)	9 ± 1 (-7)	4.1 ± 0.1 (-6)	3.9 ± 0.2 (-6)
^{133}I	1.24 ± 0.09(-6)	1.1 ± 0.1 (-6)	2.4 ± 0.2 (-6)	1.8 ± 0.2 (-6)
^{135}I	<8(-7)	7 ± 3 (-7)	*	<2.1(-6)
^{134}Cs	2.06 ± 0.08(-6)	6.4 ± 0.2 (-6)	8.5 ± 0.2 (-6)	8.5 ± 0.3 (-6)
^{137}Cs	4.1 ± 0.1 (-6)	1.01 ± 0.03(-5)	1.42 ± 0.03(-5)	1.30 ± 0.04(-5)
^{24}Na	<2(-7)	2.1 ± 0.2 (-6)	*	1.7 ± 0.2 (-6)
^{51}Cr	2.37 ± 0.03(-4)	1.12 ± 0.09(-5)	2.48 ± 0.03(-4)	1.87 ± 0.03(-4)
^{54}Mn	4.07 ± 0.06(-5)	5.1 ± 0.3 (-6)	4.58 ± 0.07(-5)	4.2 ± 0.10(-5)
^{59}Fe	1.03 ± 0.02(-5)	<7(-7)	*	9.6 ± 0.5 (-6)
^{58}Co	5.6 ± 0.5 (-6)	1.0 ± 0.1 (-6)	6.6 ± 0.5 (-6)	7.2 ± 0.3 (-6)
^{60}Co	5.34 ± 0.05(-5)	7.1 ± 0.4 (-6)	6.0 ± 0.6 (-5)	6.74 ± 0.09(-5)
^{65}Zn	2.2 ± 0.4 (-6)	<8(-7)	*	2.0 ± 0.5 (-6)
^{99}Mo	1.5 ± 0.4 (-6)	<3(-6)	*	<4(-6)
^{103}Ru	3 ± 1 (-7)	<3(-7)	*	<7(-7)
^{110m}Ag	1.2 ± 0.2 (-6)	3 ± 1 (-7)	1.5 ± 0.2 (-6)	2.5 ± 0.9 (-6)
^{140}Ba	5.2 ± 0.3 (-6)	1.3 ± 0.4 (-6)	6.5 ± 0.5 (-6)	7.6 ± 0.7 (-6)
^{140}La	6.8 ± 0.2 (-6)	1.1 ± 0.1 (-6)	7.9 ± 0.2 (-6)	7.6 ± 0.3 (-6)
^{141}Ce	5.5 ± 0.5 (-7)	<4(-7)	*	<8(-7)

Table 8.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "B"
04/20/82--0900
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	2.97 ± 0.08(-6)	3.6 ± 0.1 (-6)	6.5 ± 0.2 (-6)	3.4 ± 0.4 (-6)
^{133}I	9 ± 2 (-7)	<3(-6)	*	1.4 ± 0.4 (-6)
^{134}Cs	4.7 ± 0.1 (-6)	7.9 ± 0.2 (-6)	1.26 ± 0.02(-5)	8.4 ± 0.5 (-6)
^{137}Cs	6.7 ± 0.2 (-6)	1.20 ± 0.02(-5)	1.87 ± 0.02(-5)	1.23 ± 0.07(-5)
^{51}Cr	2.19 ± 0.04(-4)	2.09 ± 0.02(-4)	4.28 ± 0.04(-4)	2.20 ± 0.08(-4)
^{54}Mn	4.3 ± 0.1 (-5)	4.52 ± 0.06(-5)	8.8 ± 0.1 (-5)	5.0 ± 0.2 (-5)
^{59}Fe	7.2 ± 0.3 (-6)	7.2 ± 0.3 (-6)	1.43 ± 0.04(-5)	7.5 ± 0.8 (-6)
^{58}Co	4.7 ± 0.4 (-6)	6.6 ± 0.3 (-6)	1.13 ± 0.05(-5)	7.2 ± 0.7 (-6)
^{60}Co	1.17 ± 0.02(-4)	1.20 ± 0.02(-4)	2.37 ± 0.03(-4)	1.33 ± 0.02(-4)
^{65}Zn	3.1 ± 0.6 (-6)	3.1 ± 0.4 (-6)	6.2 ± 0.7 (-6)	3 ± 1 (-6)
^{99}Mo	2.7 ± 0.5 (-6)	<7(-6)	*	<7(-6)
^{103}Ru	1.7 ± 0.7 (-7)	<3(-7)	*	<9(-7)
^{140}Ba	4.5 ± 0.3 (-6)	3 ± 1 (-6)	7 ± 1 (-6)	9 ± 2 (-6)
^{140}La	7.0 ± 0.3 (-6)	8.8 ± 0.7 (-6)	1.58 ± 0.08(-5)	6.2 ± 0.5 (-6)
^{141}Ce	6.2 ± 0.6 (-7)	4 ± 2 (-7)	1.0 ± 0.2 (-6)	<2(-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "B"
05/19/82--1535
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	1.98 ± 0.03(-6)	1.159 ± 0.007(-4)	1.179 ± 0.007(-4)	1.31 ± 0.01(-4)
^{133}I	<6(-8)	7 ± 3 (-7)	*	<2(-6)
^{134}Cs	4.29 ± 0.06(-6)	1.58 ± 0.02(-4)	1.62 ± 0.02(-4)	1.90 ± 0.02(-4)
^{136}Cs	2.0 ± 0.2 (-7)	7.9 ± 0.3 (-6)	8.1 ± 0.3 (-6)	8.8 ± 0.4 (-6)
^{137}Cs	6.53 ± 0.09(-6)	2.03 ± 0.03(-4)	2.10 ± 0.03(-4)	2.44 ± 0.03(-4)
^{24}Na	<5(-8)	8.9 ± 0.3 (-6)	*	9.7 ± 0.4 (-6)
^{51}Cr	4.24 ± 0.03(-5)	2.6 ± 0.2 (-5)	6.8 ± 0.2 (-5)	6.1 ± 0.3 (-5)
^{54}Mn	1.75 ± 0.2 (-5)	6.38 ± 0.06(-5)	8.13 ± 0.06(-5)	1.06 ± 0.02(-4)
^{59}Fe	5.1 ± 0.1 (-6)	<2(-6)	*	3.2 ± 0.6 (-6)
^{57}Co	3 ± 1 (-8)	<5(-7)	*	<6(-7)
^{58}Co	3.85 ± 0.05(-6)	2.47 ± 0.05(-5)	2.86 ± 0.05(-5)	4.26 ± 0.08(-5)
^{60}Co	4.67 ± 0.05(-5)	1.97 ± 0.03(-4)	2.44 ± 0.03(-4)	3.48 ± 0.05(-4)
^{65}Zn	2.12 ± 0.09(-6)	5.4 ± 0.7 (-6)	7.5 ± 0.7 (-6)	1.2 ± 0.2 (-5)
^{95}Zr	3.4 ± 0.4 (-7)	<9(-7)	*	<3(-6)
^{95}Nb	7.1 ± 0.8 (-7)	<7(-7)	*	<2(-6)
^{103}Ru	5.5 ± 0.2 (-7)	<9(-7)	*	<2(-6)
^{140}Ba	2.4 ± 0.8 (-7)	2 ± 1 (-6)	2 ± 1 (-6)	6 ± 2 (-6)
^{140}La	2.77 ± 0.05(-6)	<5(-7)	*	3.1 ± 0.3 (-6)
^{141}Ce	6.3 ± 0.2 (-7)	<2(-6)	*	1.2 ± 0.4 (-6)
^{143}Ce	<8(-8)	<2(-6)	*	1.83 ± 0.7 (-6)
^{144}Ce	4.7 ± 0.8 (-7)	<3(-6)	*	<5(-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "B"
05/26/82--1650
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	5.5 ± 0.3 (-7)	1.40 ± 0.08(-6)	1.95 ± 0.08(-6)	1.8 ± 0.1 (-6)
^{134}Cs	5.3 ± 0.5 (-7)	6.7 ± 0.4 (-7)	1.20 ± 0.06(-6)	1.27 ± 0.08(-6)
^{137}Cs	8.2 ± 0.5 (-7)	9.2 ± 0.6 (-7)	1.74 ± 0.08(-6)	1.64 ± 0.09(-6)
^{51}Cr	5.83 ± 0.06(-5)	1.5 ± 0.4 (-6)	5.98 ± 0.07(-5)	5.05 ± 0.07(-5)
^{54}Mn	3.74 ± 0.09(-5)	9 ± 2 (-7)	3.83 ± 0.09(-5)	2.86 ± 0.07(-5)
^{59}Fe	9.4 ± 0.2 (-6)	<2(-7)	*	7.2 ± 0.2 (-6)
^{57}Co	3 ± 1 (-8)	<8(-8)	*	9 ± 4 (-8)
^{58}Co	4.9 ± 0.1 (-6)	3.6 ± 0.4 (-7)	5.3 ± 0.1 (-6)	4.7 ± 0.2 (-6)
^{60}Co	6.4 ± 0.1 (-5)	2.9 ± 0.1 (-6)	6.7 ± 0.1 (-5)	6.1 ± 0.1 (-5)
^{65}Zn	2.6 ± 0.2 (-6)	<2(-7)	*	2.6 ± 0.4 (-6)
^{95}Zr	4 ± 1 (-7)	<1(-7)	*	3 ± 2 (-7)
^{95}Nb	6.3 ± 0.7 (-7)	<8(-8)	*	4 ± 1 (-7)
^{103}Ru	5.3 ± 0.5 (-7)	<6(-8)	*	5.4 ± 0.7 (-7)
^{110m}Ag	1.2 ± 0.1 (-6)	<1(-7)	*	1.4 ± 0.1 (-6)
^{140}Ba	3 ± 2 (-7)	<4(-7)	*	<9(-7)
^{140}La	1.04 ± 0.08(-6)	1.8 ± 0.4 (-7)	1.22 ± 0.09(-6)	9.6 ± 0.6 (-7)
^{141}Ce	4.5 ± 0.3 (-7)	<1.0(-7)	*	4 ± 1 (-7)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "B"
05/27/82--1058
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	2.8 ± 0.1 (-7)	4.4 ± 0.1 (-6)	4.7 ± 0.1 (-6)	4.7 ± 0.2 (-6)
^{134}Cs	1.1 ± 0.1 (-7)	1.11 ± 0.08(-6)	1.21 ± 0.08(-6)	1.2 ± 0.1 (-6)
^{136}Cs	<3(-8)	1.7 ± 0.5 (-7)	*	<3(-7)
^{137}Cs	2.0 ± 0.2 (-7)	1.5 ± 0.1 (-6)	1.7 ± 0.1 (-6)	1.8 ± 0.2 (-6)
^{51}Cr	1.46 ± 0.02(-5)	3.0 ± 0.4 (-6)	1.76 ± 0.04(-5)	1.6 ± 0.1 (-5)
^{54}Mn	6.96 ± 0.08(-6)	1.34 ± 0.09(-6)	8.3 ± 0.1 (-6)	8.9 ± 0.3 (-6)
^{59}Fe	1.83 ± 0.04(-6)	<2(-7)	*	1.9 ± 0.3 (-6)
^{58}Co	1.00 ± 0.03(-7)	3.1 ± 0.6 (-7)	4.1 ± 0.6 (-7)	1.7 ± 0.2 (-6)
^{60}Co	1.3 ± 0.2 (-5)	3.4 ± 0.1 (-6)	1.6 ± 0.2 (-5)	1.92 ± 0.04(-5)
^{65}Zn	5.9 ± 0.4 (-7)	<4(-7)	*	<6(-7)
^{95}Zr	7 ± 2 (-8)	<2(-7)	*	<6(-7)
^{95}Nb	6 ± 2 (-8)	<2(-7)	*	<5(-7)
^{103}Ru	1.0 ± 0.1 (-7)	<9(-8)	*	<4(-7)
^{110m}Ag	5.0 ± 0.3 (-7)	<3(-7)	*	1.0 ± 0.2 (-6)
^{140}La	4.7 ± 0.2 (-7)	1.4 ± 0.7 (-7)	6.1 ± 0.7 (-7)	6 ± 2 (-7)
^{141}Ce	1.92 ± 0.09(-7)	<2(-7)	*	<3(-7)
^{144}Ce	8 ± 4 (-8)	<2(-6)	*	<2(-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "D"
05/19/82--1135
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	1.7 ± 0.1 (-5)	1.58 ± 0.01(-4)	1.75 ± 0.01(-4)	1.78 ± 0.01(-4)
^{134}Cs	6.4 ± 0.2 (-6)	2.18 ± 0.03(-4)	2.24 ± 0.03(-4)	2.31 ± 0.02(-4)
^{136}Cs	5 ± 2 (-7)	1.09 ± 0.04(-5)	1.14 ± 0.04(-5)	1.00 ± 0.06(-5)
^{137}Cs	9.7 ± 0.2 (-6)	2.76 ± 0.03(-4)	2.85 ± 0.03(-4)	2.93 ± 0.04(-4)
^{24}Na	<8(-8)	1.85 ± 0.06(-5)	*	1.86 ± 0.05(-5)
^{51}Cr	5.08 ± 0.02(-4)	5.0 ± 0.3 (-5)	5.58 ± 0.04(-4)	4.53 ± 0.05(-4)
^{54}Mn	1.68 ± 0.02(-4)	1.01 ± 0.02(-4)	2.69 ± 0.03(-4)	2.56 ± 0.04(-4)
^{59}Fe	6.57 ± 0.08(-5)	<3(-6)	*	5.5 ± 0.1 (-5)
^{57}Co	1.1 ± 0.4 (-7)	<8(-7)	*	<2(-6)
^{58}Co	2.6 ± 0.2 (-5)	3.93 ± 0.08(-5)	6.5 ± 0.2 (-5)	7.1 ± 0.1 (-5)
^{60}Co	2.52 ± 0.03(-4)	2.93 ± 0.05(-4)	5.45 ± 0.06(-4)	6.1 ± 0.1 (-4)
^{65}Zn	1.10 ± 0.04(-5)	1.3 ± 0.1 (-5)	2.4 ± 0.1 (-5)	2.6 ± 0.2 (-5)
^{95}Zr	1.8 ± 0.2 (-6)	<2(-6)	*	<4(-6)
^{95}Nb	3.6 ± 0.1 (-6)	<2(-6)	*	3.2 ± 0.6 (-6)
^{103}Ru	3.4 ± 0.1 (-6)	<2(-6)	*	3.9 ± 0.7 (-6)
^{140}Ba	4.1 ± 0.4 (-6)	<8(-6)	*	1.3 ± 0.2 (-5)
^{140}La	6.2 ± 0.3 (-6)	6 ± 2 (-7)	6.8 ± 0.4 (-6)	6.3 ± 0.4 (-6)
^{141}Ce	1.96 ± 0.06(-6)	<8(-7)	*	1.3 ± 0.6 (-6)
^{144}Ce	1.6 ± 0.2 (-6)	<6(-6)	*	<8(-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "D"
05/26/82—1515
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	1.83 ± 0.09(-5)	8.71 ± 0.08(-5)	1.05 ± 0.01(-4)	1.08 ± 0.01(-4)
^{134}Cs	1.40 ± 0.03(-5)	2.58 ± 0.02(-4)	2.72 ± 0.02(-4)	2.77 ± 0.02(-4)
^{136}Cs	<5(-7)	8.9 ± 0.2 (-6)	*	9.5 ± 0.3 (-6)
^{137}Cs	1.93 ± 0.03(-5)	3.40 ± 0.05(-4)	3.59 ± 0.05(-4)	3.63 ± 0.03(-4)
^{24}Na	<2(-7)	6.3 ± 0.2 (-6)	*	6.4 ± 0.2 (-6)
^{51}Cr	7.9 ± 0.1 (-4)	2.4 ± 0.2 (-5)	8.1 ± 0.1 (-4)	7.52 ± 0.04(-4)
^{54}Mn	2.93 ± 0.05(-4)	1.01 ± 0.02(-4)	3.94 ± 0.05(-4)	3.92 ± 0.05(-4)
^{59}Fe	1.09 ± 0.02(-4)	3.8 ± 0.2 (-6)	1.13 ± 0.02(-4)	1.01 ± 0.02(-4)
^{57}Co	2.6 ± 0.4 (-7)	<3(-7)	2.6 ± 0.4 (-7)	4 ± 2 (-7)
^{58}Co	5.5 ± 0.1 (-5)	3.75 ± 0.08(-5)	9.2 ± 0.1 (-5)	1.09 ± 0.02(-4)
^{60}Co	4.32 ± 0.05(-4)	2.90 ± 0.06(-4)	7.22 ± 0.08(-4)	8.5 ± 0.1 (-4)
^{65}Zn	1.82 ± 0.04(-5)	1.16 ± 0.07(-5)	2.98 ± 0.08(-5)	3.4 ± 0.2 (-5)
^{95}Zr	3.3 ± 0.2 (-6)	<8(-7)	*	4.5 ± 0.6 (-6)
^{95}Nb	6.6 ± 0.2 (-6)	<5(-7)	*	5.8 ± 0.3 (-6)
^{103}Ru	6.4 ± 0.2 (-6)	<8(-7)	*	6.7 ± 0.3 (-6)
^{110m}Ag	4.8 ± 0.3 (-6)	<6(-7)	*	6.0 ± 0.4 (-6)
^{124}Sb	1.4 ± 0.2 (-6)	<4(-7)	*	1.8 ± 0.2 (-6)
^{140}Ba	5.9 ± 0.5 (-6)	<4(-6)	*	1.2 ± 0.1 (-5)
^{140}La	8.3 ± 0.3 (-6)	5.4 ± 0.8 (-7)	8.8 ± 0.3 (-6)	7.5 ± 0.3 (-6)
^{141}Ce	4.4 ± 0.4 (-6)	<8(-7)	*	2.6 ± 0.4 (-6)
^{144}Ce	4.2 ± 0.3 (-6)	<2(-6)	*	<4(-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "D"
05/27/82--1055
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	3.52 ± 0.04(-6)	5.27 ± 0.06(-5)	5.62 ± 0.06(-5)	5.58 ± 0.06(-5)
^{134}Cs	6.34 ± 0.09(-6)	1.54 ± 0.01(-4)	1.63 ± 0.01(-4)	1.60 ± 0.02(-4)
^{136}Cs	9 ± 4 (-8)	5.0 ± 0.4 (-6)	5.1 ± 0.4 (-6)	5.3 ± 0.5 (-6)
^{137}Cs	9.4 ± 0.1 (-6)	1.89 ± 0.02(-4)	1.98 ± 0.02(-4)	2.00 ± 0.02(-4)
^{24}Na	2.8 ± 0.9 (-8)	1.04 ± 0.04(-5)	1.04 ± 0.04(-5)	1.16 ± 0.04(-5)
^{51}Cr	1.83 ± 0.01(-4)	3.0 ± 0.2 (-5)	2.14 ± 0.02(-4)	1.92 ± 0.07(-4)
^{54}Mn	8.28 ± 0.09(-5)	7.28 ± 0.09(-5)	1.56 ± 0.01(-4)	1.63 ± 0.03(-4)
^{59}Fe	2.70 ± 0.02(-5)	<2(-6)	*	2.60 ± 0.09(-5)
^{57}Co	5.8 ± 0.8 (-8)	<5(-7)	*	<7(-7)
^{58}Co	1.19 ± 0.06(-5)	2.88 ± 0.06(-5)	4.07 ± 0.08(-5)	4.5 ± 0.1 (-5)
^{60}Co	1.18 ± 0.02(-4)	2.22 ± 0.02(-4)	3.40 ± 0.03(-4)	3.78 ± 0.05(-4)
^{65}Zn	5.6 ± 0.2 (-6)	7 ± 1 (-6)	1.3 ± 0.1 (-5)	1.7 ± 0.1 (-5)
^{95}Zr	8.1 ± 0.5 (-7)	<9(-7)	*	<3(-6)
^{95}Nb	1.7 ± 0.2 (-6)	<5(-7)	*	1.1 ± 0.5 (-6)
^{103}Ru	1.49 ± 0.4 (-6)	<2(-6)	*	2.1 ± 0.8 (-6)
^{110m}Ag	2.3 ± 0.1 (-6)	<1(-6)	*	2.5 ± 0.4 (-6)
^{124}Sb	2.2 ± 0.4 (-7)	<8(-7)	2.2 ± 0.5 (-7)	<1.1(-6)
^{140}Ba	8.6 ± 0.9 (-7)	<3(-6)	*	<4(-6)
^{140}La	2.16 ± 0.05(-6)	4 ± 2 (-7)	2.6 ± 0.2 (-6)	2.7 ± 0.3 (-6)
^{141}Ce	1.05 ± 0.05(-6)	<2(-6)	*	1.6 ± 0.5 (-6)
^{144}Ce	8.6 ± 0.7 (-6)	<4(-6)	*	4 ± 2 (-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "A"
05/24/82--1630
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	9.0 ± 0.9 (-6)	2.63 ± 0.07(-5)	3.5 ± 0.1 (-5)	3.8 ± 0.2 (-5)
^{134}Cs	9.0 ± 0.8 (-6)	3.14 ± 0.03(-4)	3.23 ± 0.03(-4)	2.98 ± 0.06(-4)
^{137}Cs	1.53 ± 0.09(-5)	4.63 ± 0.08(-4)	4.78 ± 0.08(-4)	4.82 ± 0.05(-4)
^{24}Na	<5(-7)	8 ± 2 (-7)	*	1.5 ± 0.7 (-6)
^{51}Cr	6.07 ± 0.06(-4)	1.2 ± 0.2 (-5)	6.20 ± 0.06(-4)	7.1 ± 0.1 (-4)
^{54}Mn	7.06 ± 0.08(-4)	1.14 ± 0.02(-4)	8.20 ± 0.08(-4)	9.0 ± 0.2 (-4)
^{59}Fe	6.9 ± 0.2 (-5)	2.2 ± 0.2 (-6)	7.1 ± 0.2 (-5)	8.4 ± 0.4 (-5)
^{57}Co	4 ± 2 (-7)	<2(-6)	*	<3(-6)
^{58}Co	4.1 ± 0.1 (-5)	2.08 ± 0.03(-5)	6.2 ± 0.1 (-5)	7.5 ± 0.2 (-5)
^{60}Co	2.4 ± 0.3 (-3)	3.25 ± 0.04(-4)	2.7 ± 0.3 (-3)	3.16 ± 0.05(-3)
^{65}Zn	6.6 ± 0.3 (-5)	6.8 ± 0.9 (-6)	7.3 ± 0.3 (-5)	8.3 ± 0.9 (-5)
^{95}Zr	5 ± 2 (-6)	<2(-6)	*	<2(-5)
^{95}Nb	4 ± 1 (-6)	<6(-7)	*	7 ± 2 (-6)
^{103}Ru	2.4 ± 0.8 (-6)	<8(-7)	*	<7(-6)
^{140}La	4.5 ± 0.9 (-6)	<2(-6)	*	5 ± 2 (-6)
^{141}Ce	1.2 ± 0.3 (-6)	<5(-7)	*	<5(-6)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
WASTE NEUTRALIZER TANK "C"
05/24/82—1640
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	<3(-6)	1.8 ± 0.1 (-5)	*	2.8 ± 0.4 (-5)
^{134}Cs	2.2 ± 0.1 (-5)	5.07 ± 0.05(-4)	5.29 ± 0.05(-4)	5.81 ± 0.08(-4)
^{137}Cs	4.2 ± 0.2 (-5)	7.6 ± 0.2 (-4)	8.0 ± 0.2 (-4)	8.93 ± 0.08(-4)
^{51}Cr	5.26 ± 0.7 (-4)	<2(-5)	*	8.2 ± 0.3 (-4)
^{54}Mn	2.19 ± 0.03(-3)	2.54 ± 0.04(-4)	2.44 ± 0.03(-3)	3.39 ± 0.08(-3)
^{59}Fe	2.38 ± 0.03(-4)	6 ± 1 (-6)	2.44 ± 0.03(-4)	3.4 ± 0.1 (-4)
^{57}Co	2.1 ± 0.3 (-6)	<2(-6)	*	3 ± 1 (-6)
^{58}Co	1.8 ± 0.4 (-4)	3.3 ± 0.2 (-5)	2.1 ± 0.4 (-4)	3.1 ± 0.1 (-4)
^{60}Co	4.72 ± 0.06(-3)	6.1 ± 0.1 (-4)	5.33 ± 0.06(-3)	8.3 ± 0.10(-3)
^{65}Zn	1.60 ± 0.07(-4)	<5(-6)	*	2.4 ± 0.2 (-4)
^{95}Nb	1.2 ± 0.1 (-5)	<2(-7)	*	1.1 ± 0.6 (-5)
^{103}Ru	6 ± 2 (-6)	<3(-6)	*	<2(-5)
^{140}La	1.0 ± 0.1 (-5)	2.0 ± 0.7 (-6)	1.2 ± 0.1 (-5)	2.6 ± 0.3 (-5)
^{141}Ce	2.4 ± 0.6 (-6)	1.5 ± 0.8 (-6)	4 ± 1 (-6)	<7(-6)

* Value not measured.

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
FLOOR DRAIN SAMPLE TANK "B"
04/07/82--0937
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	1.0 ± 0.2 (-8)	4 ± 1 (-7)	5 ± 1 (-7)	<3(-7)
^{133}I	<6(-8)	4 ± 1 (-7)	*	3 ± 1 (-7)
^{134}Cs	2.6 ± 0.2 (-7)	1.6 ± 0.1 (-6)	1.9 ± 0.1 (-6)	2.0 ± 0.1 (-6)
^{137}Cs	3.7 ± 0.6 (-7)	2.5 ± 0.3 (-6)	2.8 ± 0.3 (-6)	2.8 ± 0.2 (-6)
^{24}Na	<9(-8)	3.9 ± 0.3 (-6)	*	4.0 ± 0.3 (-6)
^{51}Cr	4.8 ± 0.2 (-6)	7 ± 1 (-6)	1.2 ± 0.1 (-5)	8.7 ± 0.9 (-6)
^{54}Mn	2.4 ± 0.1 (-6)	8 ± 1 (-7)	3.2 ± 0.2 (-6)	2.8 ± 0.2 (-6)
^{59}Fe	5.4 ± 0.6 (-7)	<4(-7)	*	<7(-7)
^{58}Co	3.6 ± 0.4 (-7)	<8(-7)	*	4 ± 1 (-7)
^{60}Co	3.06 ± 0.09(-6)	1.9 ± 0.2 (-6)	4.9 ± 0.2 (-6)	5.3 ± 0.3 (-6)
^{110m}Ag	<2(-7)	<4(-7)	*	4 ± 1 (-7)
^{140}La	2.0 ± 0.3 (-7)	4 ± 1 (-7)	6 ± 1 (-7)	4 ± 2 (-7)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
FLOOR DRAIN SAMPLE TANK "B"
04/21/82--1356
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	1.25 ± 0.06(-6)	1.4 ± 0.4 (-7)	1.39 ± 0.07(-6)	1.2 ± 0.2 (-6)
^{133}I	3.85 ± 0.1 (-6)	5.0 ± 0.8 (-7)	4.4 ± 0.1 (-6)	3.6 ± 0.2 (-6)
^{135}I	3 ± 1 (-6)	<7(-7)	*	1.4 ± 0.3 (-6)
^{134}Cs	3.0 ± 0.3 (-7)	1.8 ± 0.4 (-7)	4.8 ± 0.5 (-7)	3.6 ± 0.9 (-7)
^{137}Cs	4.8 ± 0.4 (-7)	2.6 ± 0.6 (-7)	7.4 ± 0.7 (-7)	<4(-7)
^{51}Cr	3.34 ± 0.09(-4)	2.47 ± 0.7 (-5)	3.59 ± 0.09(-4)	3.1 ± 0.1 (-4)
^{54}Mn	6.7 ± 0.1 (-6)	3 ± 1 (-7)	7.0 ± 0.1 (-6)	5.8 ± 0.2 (-7)
^{59}Fe	8 ± 1 (-7)	<2(-7)	*	7 ± 2 (-7)
^{57}Co	4 ± 2 (-8)	<2(-7)	*	<3(-7)
^{58}Co	1.02 ± 0.06(-6)	<1(-7)	*	5 ± 1 (-7)
^{60}Co	3.07 ± 0.04(-5)	8.3 ± 0.9 (-7)	3.15 ± 0.04(-5)	2.95 ± 0.05(-5)
^{65}Zn	9 ± 1 (-7)	<2(-7)	*	<7(-7)
^{95}Zr	1.9 ± 0.6 (-7)	<3(-7)	*	<4(-7)
^{95}Nb	1.3 ± 0.5 (-7)	<9(-8)	*	<5(-7)
^{99}Mo	2.4 ± 0.4 (-6)	<2(-6)	*	4.7 ± 0.9 (-6)
^{103}Ru	1.4 ± 0.4 (-7)	<2(-7)	*	5 ± 2 (-7)
^{110m}Ag	6 ± 2 (-7)	<2(-7)	*	7 ± 2 (-7)
^{140}Ba	4 ± 1 (-7)	<6(-7)	*	<1(-6)
^{140}La	4.0 ± 0.1 (-6)	3.3 ± 0.9 (-7)	4.3 ± 0.1 (-6)	4.6 ± 0.2 (-6)
^{141}Ce	5.9 ± 0.7 (-7)	<3(-7)	*	5 ± 2 (-7)

Table B.4-11 (cont'd)
FLOOR DRAIN SYSTEM FILTERED SAMPLES
FLOOR DRAIN SAMPLE TANK "B"
06/08/82--1111
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	5.08 ± 0.93(-8)	3 ± 1 (-7)	4 ± 1 (-7)	<5(-7)
^{134}Cs	4.5 ± 0.2 (-7)	2.00 ± 0.09(-6)	2.45 ± 0.09(-6)	2.3 ± 0.1 (-6)
^{137}Cs	6.2 ± 0.2 (-7)	2.4 ± 0.1 (-6)	3.0 ± 0.1 (-6)	2.7 ± 0.1 (-6)
^{51}Cr	1.21 ± 0.01(-5)	3.9 ± 0.7 (-6)	1.60 ± 0.07(-5)	1.23 ± 0.09(-5)
^{54}Mn	3.96 ± 0.07(-5)	1.35 ± 0.02(-5)	5.31 ± 0.07(-5)	3.63 ± 0.06(-5)
^{59}Fe	9.34 ± 0.08(-6)	2.6 ± 0.2 (-6)	1.2 ± 0.2 (-5)	7.2 ± 0.2 (-6)
^{57}Co	4.2 ± 0.6 (-8)	<2(-7)	*	<1(-7)
^{58}Co	4.99 ± 0.09(-6)	2.8 ± 0.4 (-6)	7.8 ± 0.4 (-6)	7.3 ± 0.4 (-6)
^{60}Co	6.80 ± 0.09(-5)	3.93 ± 0.07(-5)	1.07 ± 0.01(-4)	8.6 ± 0.2 (-5)
^{65}Zn	2.1 ± 0.1 (-6)	5 ± 1 (-7)	2.6 ± 0.2 (-6)	2.7 ± 0.3 (-6)
^{95}Zr	5.7 ± 0.2 (-7)	<3(-7)	*	<6(-7)
^{95}Nb	8.2 ± 0.2 (-7)	2.3 ± 0.8 (-7)	1.05 ± 0.08(-6)	5 ± 1 (-7)
^{103}Ru	5.1 ± 0.2 (-7)	<3(-7)	*	3 ± 1 (-7)
^{124}Sb	1.4 ± 0.2 (-7)	<2(-7)	*	<2(-7)
^{125}Sb	2.1 ± 0.4 (-7)	<5(-7)	*	<6(-7)
^{140}La	7 ± 1 (-8)	<3(-7)	*	<9(-8)
^{141}Ce	1.9 ± 0.1 (-7)	<4(-7)	*	<3(-7)
^{144}Ce	3.8 ± 0.4 (-7)	<1(-6)	*	<2(-6)

* Value not measured.

Table B.4-12
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
RADWASTE COLLECTION TANK
04/07/82--1017
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab[a]
^{131}I	2.43 ± 0.06(-4)	4.9 ± 0.5 (-6)	2.48 ± 0.06(-4)	1.97 ± 0.03(-4)
^{132}I	9.2 ± 0.9 (-5)	1.6 ± 0.1 (-5)	1.08 ± 0.09(-4)	1.48 ± 0.03(-4)
^{133}I	4.08 ± 0.05(-4)	2.78 ± 0.08(-5)	4.36 ± 0.05(-4)	3.3 ± 0.4 (-4)
^{134}I	<2(-2)	<3(-5)	*	8.4 ± 0.9 (-5)
^{135}I	5.5 ± 0.1 (-4)	4.6 ± 0.3 (-5)	6.00 ± 0.08(-4)	4.92 ± 0.07(-4)
^{134}Cs	3.30 ± 0.02(-4)	1.78 ± 0.05(-5)	3.48 ± 0.02(-4)	4.68 ± 0.04(-4)
^{137}Cs	5.80 ± 0.02(-4)	2.49 ± 0.07(-5)	6.05 ± 0.02(-4)	6.9 ± 0.1 (-4)
^{24}Na	8.0 ± 0.1 (-4)	2.04 ± 0.04(-4)	1.00 ± 0.01(-3)	9.7 ± 0.1 (-4)
^{51}Cr	7.9 ± 0.1 (-3)	5.7 ± 0.3 (-5)	8.0 ± 0.1 (-3)	5.67 ± 0.02(-3)
^{54}Mn	1.5 ± 0.1 (-3)	2.7 ± 0.1 (-5)	1.6 ± 0.1 (-3)	1.21 ± 0.02(-3)
^{59}Fe	3.22 ± 0.03(-4)	6.8 ± 0.8 (-6)	3.29 ± 0.03(-4)	2.19 ± 0.04(-4)
^{58}Co	3.24 ± 0.02(-4)	3.8 ± 0.5 (-6)	3.28 ± 0.02(-4)	2.68 ± 0.09(-4)
^{60}Co	2.50 ± 0.03(-3)	3.15 ± 0.08(-5)	2.53 ± 0.03(-3)	2.41 ± 0.04(-3)
^{65}Zn	7.9 ± 0.5 (-5)	<3(-6)	*	6.2 ± 0.5 (-5)
^{91}Sr	6.26 ± 0.09(-4)	<2(-4)	*	5.3 ± 0.2 (-4)
^{91m}Y	<6(-4)	<2(-4)	*	1.5 ± 0.5 (-4)
^{99}Mo	<2(-3)	<5(-6)	*	1.0 ± 0.2 (-4)
^{103}Ru	5.1 ± 0.8 (-6)	<9(-7)	*	<8(-6)
^{110m}Ag	2.9 ± 0.9 (-5)	<1(-6)	*	2.1 ± 0.6 (-5)
^{139}Ba	5.6 ± 0.7 (-4)	<3(-5)	*	4.0 ± 0.1 (-4)
^{140}Ba	4.47 ± 0.04(-4)	1.2 ± 0.2 (-5)	4.59 ± 0.04(-4)	3.42 ± 0.07(-4)
^{140}La	2.83 ± 0.04(-4)	2.1 ± 0.4 (-6)	2.85 ± 0.04(-4)	2.04 ± 0.03(-4)
^{141}Ce	1.8 ± 0.1 (-5)	<1(-6)	*	1.6 ± 0.2 (-5)

a. The listed values may have short-lived contaminants present as the sample was counted only once.

Table B.4-12 (cont'd)
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
RADWASTE COLLECTION TANK
11/11/82--1135
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	<6(-7)	3.7 ± 0.6 (-6)	*	<5(-6)
^{134}Cs	2.2 ± 0.3 (-6)	3.21 ± 0.08(-5)	3.43 ± 0.08(-5)	3.9 ± 0.1 (-5)
^{137}Cs	3.8 ± 0.6 (-6)	5.9 ± 0.2 (-5)	6.3 ± 0.2 (-5)	6.9 ± 0.1 (-5)
^{24}Na	<7(-7)	3.57 ± 0.07(-4)	*	3.77 ± 0.07(-4)
^{51}Cr	7.8 ± 0.2 (-5)	6.4 ± 0.4 (-5)	1.41 ± 0.04(-4)	1.11 ± 0.05(-4)
^{54}Mn	4.22 ± 0.08(-4)	4.4 ± 0.1 (-5)	4.66 ± 0.08(-4)	3.16 ± 0.05(-4)
^{59}Fe	3.9 ± 0.1 (-5)	<3(-6)	*	2.6 ± 0.2 (-5)
^{58}Co	2.18 ± 0.07(-5)	9.2 ± 0.8 (-6)	3.1 ± 0.1 (-5)	2.5 ± 0.1 (-5)
^{60}Co	5.59 ± 0.06(-4)	2.29 ± 0.04(-4)	7.88 ± 0.07(-4)	6.66 ± 0.08(-4)
^{65}Zn	2.0 ± 0.1 (-5)	<7(-6)	*	1.1 ± 0.3 (-5)
^{91m}Y	*	*	*	*
^{110m}Ag	<1(-5)	3 ± 1 (-6)	*	9 ± 1 (-6)
^{140}Ba	<2(-6)	<9(-6)	*	8 ± 3 (-6)
^{140}La	2.9 ± 0.3 (-6)	6 ± 1 (-6)	9 ± 1 (-6)	6 ± 2 (-6)

* Value not measured.

Table B.4-12 (cont'd)
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
WASTE COLLECTION FILTER EFFLUENT
04/07/82—0932
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	<3(-8)	<2(-7)	*	<2(-5)
^{132}I	<5(-7)	<6(-7)	*	<6(-7)
^{133}I	<4(-8)	<4(-7)	*	<2(-7)
^{135}I	<2(-7)	<2(-6)	*	<9(-7)
^{134}Cs	1.7 ± 0.1 (-7)	1.8 ± 0.1 (-6)	2.0 ± 0.1 (-6)	2.0 ± 0.1 (-6)
^{137}Cs	2.8 ± 0.2 (-7)	3.1 ± 0.2 (-6)	3.4 ± 0.2 (-6)	2.6 ± 0.2 (-6)
^{24}Na	<8(-8)	8 ± 2 (-7)	*	1.3 ± 0.2 (-6)
^{51}Cr	2.1 ± 0.1 (-6)	<3(-6)	*	1.7 ± 0.6 (-6)
^{54}Mn	2.0 ± 0.2 (-7)	<2(-7)	*	4 ± 1 (-7)
^{59}Fe	7 ± 3 (-8)	<7(-7)	*	4 ± 2 (-7)
^{58}Co	3 ± 1 (-8)	<3(-7)	*	<2(-7)
^{60}Co	6.4 ± 0.3 (-7)	<5(-7)	*	1.7 ± 0.2 (-6)
^{65}Zn	6 ± 3 (-8)	<2(-7)	*	<5(-7)
^{91}Sr	<2(-7)	<2(-6)	*	<7(-7)
^{91m}Y	<9(-6)	<2(-5)	*	<7(-7)
^{99}Mo	<2(-7)	<3(-6)	*	<1(-6)
^{110m}Ag	<5(-8)	<7(-8)	*	<3(-7)
^{139}Ba	<4(-6)	<9(-6)	*	<4(-6)
^{140}Ba	<7(-8)	<5(-7)	*	<2(-6)
^{140}La	<7(-8)	<2(-7)	*	<5(-7)
^{141}Ce	<6(-8)	<4(-6)	*	<3(-7)

Table B.4-12 (cont'd)
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
WASTE COLLECTION FILTER EFFLUENT
11/11/82—1110
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	<4(-8)	<3(-7)	*	<3(-7)
^{134}Cs	<3(-8)	3.0 ± 0.7 (-7)	*	<5(-7)
^{137}Cs	<3(-8)	6 ± 1 (-7)	*	6 ± 1 (-7)
^{24}Na	<4(-8)	2.6 ± 0.3 (-6)	*	4.5 ± 0.3 (-6)
^{51}Cr	2.5 ± 0.7 (-7)	<2(-6)	*	<3(-6)
^{54}Mn	9.3 ± 0.3 (-7)	4 ± 1 (-7)	1.3 ± 0.1 (-6)	8 ± 1 (-7)
^{59}Fe	1.0 ± 0.2 (-7)	<7(-7)	*	<5(-7)
^{58}Co	6 ± 1 (-8)	<2(-7)	*	3.2 ± 0.9 (-7)
^{60}Co	1.80 ± 0.04(-6)	<4(-7)	*	2.6 ± 0.2 (-6)
^{65}Zn	<9(-8)	<2(-7)	*	<3(-7)
^{110m}Ag	<3(-8)	<1(-7)	*	<4(-7)
^{140}Ba	<7(-8)	<6(-7)	*	<9(-7)
^{140}La	<2(-8)	<2(-7)	*	<2(-7)

Table B.4-12 (cont'd)
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
WASTE DEMINERALIZER EFFLUENT
Sample 04/07/82--0934
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{134}Cs	<4(-8)	<9(-8)	*	<4(-7)
^{138}Cs	1.2 ± 0.3 (-7)	<3(-7)	*	<3(-7)
^{24}Na	1.0 ± 0.3 (-8)	<3(-7)	*	<2(-7)
^{51}Cr	7 ± 1 (-7)	<2(-6)	*	<1(-6)
^{54}Mn	2.0 ± 0.3 (-7)	<2(-7)	*	<3(-7)
^{59}Fe	<8(-8)	<3(-7)	*	<4(-7)
^{58}Co	<1(-7)	<1(-7)	*	<2(-7)
^{60}Co	3.2 ± 0.4 (-7)	<3(-7)	*	<3(-7)
^{65}Zn	<1(-7)	<5(-7)	*	<4(-7)

WASTE DEMINERALIZER EFFLUENT
05/27/82--1102
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	4 ± 1 (-8)	<1(-7)	*	<3(-7)
^{51}Cr	3.5 ± 0.2 (-6)	<8(-7)	*	3.4 ± 0.6 (-6)
^{54}Mn	<2(-7)	<2(-7)	*	7 ± 1 (-7)
^{60}Co	1.0 ± 0.1 (-6)	<2(-7)	*	4.9 ± 0.2 (-6)
^{95}Nb	5 ± 2 (-8)	<7(-8)	*	1.9 ± 0.7 (-7)
^{141}Ce	1.3 ± 0.2 (-7)	<2(-7)	*	3 ± 1 (-7)

* Value not measured.

Table B.4-12 (cont'd)
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
RADWASTE SAMPLE TANK B
04/07/82—0944
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{51}Cr	1.88 ± 0.07(-6)	<2(-6)	*	<2(-6)
^{54}Mn	1.52 ± 0.03(-6)	4 ± 1 (-7)	1.9 ± 0.1 (-6)	1.1 ± 0.1 (-6)
^{59}Fe	3.4 ± 0.3 (-7)	<3(-7)	*	<2(-7)
^{58}Co	1.7 ± 0.2 (-7)	<2(-7)	*	1.7 ± 0.6 (-7)
^{60}Co	1.96 ± 0.03(-6)	<4(-7)	*	1.2 ± 0.1 (-6)

RADWASTE SAMPLE TANK "A"
10/22/82--1030
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{134}Cs	1.10 ± 0.09(-7)	<2(-7)	*	3.2 ± 0.6 (-7)
^{137}Cs	2.0 ± 0.2 (-7)	<2(-7)	*	3.3 ± 0.6 (-7)
^{51}Cr	1.85 ± 0.07(-6)	<2(-6)	*	2.7 ± 0.4 (-6)
^{54}Mn	2.21 ± 0.06(-6)	5 ± 1 (-7)	2.7 ± 0.1 (-6)	2.6 ± 0.1 (-6)
^{59}Fe	3.2 ± 0.2 (-7)	<3(-7)	*	<6(-7)
^{58}Co	2.3 ± 0.1 (-7)	<1(-7)	*	3.2 ± 0.7 (-7)
^{60}Co	5.28 ± 0.09(-6)	7 ± 1 (-7)	6.0 ± 0.1 (-6)	6.2 ± 0.2 (-6)
^{65}Zn	1.2 ± 0.2 (-7)	<2(-7)	*	<4(-7)
^{140}La	1.42 ± 0.2 (-7)	<2(-7)	*	<3(-7)

* Value not measured.

Table B.4-12 (cont'd)
RADWASTE COLLECTION SYSTEM FILTERED SAMPLES
RADWASTE SAMPLE TANK "A"
10/25/82--1420
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{131}I	2.9 ± 0.7 (-8)	<2(-7)	*	<2(-7)
^{133}I	1.2 ± 0.2 (-7)	<3(-7)	*	<7(-7)
^{137}Cs	<2(-8)	1.6 ± 0.6 (-7)	*	2.3 ± 0.7 (-7)
^{54}Mn	1.8 ± 0.1 (-7)	<2(-7)	*	<2(-7)
^{58}Co	4.3 ± 0.8 (-8)	<2(-7)	*	<2(-7)
^{60}Co	3.8 ± 0.2 (-7)	5 ± 1 (-7)	9 ± 1 (-7)	<5(-7)
^{95}Zr	<2.6(-8)	--	*	<1.8(-7)
^{95}Nb	<1.4(-8)	--	*	<8.5(-8)
^{140}La	6 ± 1 (-8)	<4(-7)	*	<3(-7)

RADWASTE SAMPLE TANK "A"
11/11/82--1115
(microcuries/gram)

Nuclide	Filter	Filtrate	Sum	Grab
^{54}Mn	2.5 ± 0.2 (-7)	<2(-7)	*	6 ± 1 (-7)
^{58}Co	2.1 ± 0.9 (-8)	<2(-7)	*	2.8 ± 0.9 (-7)
^{60}Co	5.1 ± 0.3 (-7)	<4(-7)	*	2.2 ± 0.2 (-6)

* Value not measured.

TABLE B.5-1
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 1 SPENT FUEL POOL FILTER/DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date/Time 3-26-82 1013	5-26-82 1005	7-15-82 0950	10-13-82[a] 1140	10-20-82 1214	10-25-82 1422
^{131}I	<3(-7)	<2(-6)	<2(-6)	<2(-6)	<8(-7)	<9(-7)
^{132}I	<5(-7)	<5(-6)	<3(-5)	<4(-6)	<4(-4)	*
^{134}Cs	6.6 ± 0.2 (-6)	3.73 ± 0.05(-5)	1.35 ± 0.01(-4)	1.26 ± 0.01(-4)	1.57 ± 0.01(-4)	1.99 ± 0.02(-4)
^{136}Cs	<3(-7)	<3(-6)	<3(-6)	<3(-6)	<6(-7)	<6(-7)
^{137}Cs	4.35 ± 0.06(-5)	2.52 ± 0.02(-4)	8.79 ± 0.07(-4)	9.56 ± 0.08(-4)	9.7 ± 0.1 (-4)	1.25 ± 0.01(-3)
^{51}Cr	<3(-6)	<2(-5)	<2(-5)	<2(-5)	6 ± 2 (-6)	<5(-6)
^{54}Mn	1.1 ± 0.2 (-6)	1.05 ± 0.01(-4)	1.76 ± 0.02(-4)	1.59 ± 0.02(-4)	4.7 ± 0.1 (-5)	8.5 ± 0.1 (-5)
^{59}Fe	<6(-7)	<3(-6)	<6(-6)	<3(-6)	<4(-7)	<6(-7)
^{58}Co	<4(-7)	<3(-6)	<4(-6)	<4(-6)	<4(-7)	<4(-7)
^{60}Co	2.39 ± 0.07(-5)	4.00 ± 0.04(-3)	2.00 ± 0.03(-3)	1.57 ± 0.01(-2)	1.22 ± 0.02(-4)	2.39 ± 0.03(-4)
^{65}Zn	<5(-7)	2 ± 1 (-5)	<9(-6)	2.7 ± 0.9 (-5)	<9(-7)	<2(-6)
^{95}Zr	<5(-7)	<5(-6)	<5(-6)	<5(-6)	<1(-6)	<8(-7)
^{99}Nb	<2(-7)	<3(-6)	<3(-6)	<4(-6)	<4(-7)	<4(-7)
^{103}Ru	<3(-7)	<2(-6)	<2(-6)	<2(-6)	<5(-6)	<3(-5)
^{124}Sb	<5(-7)	<2(-6)	<3(-6)	<3(-6)	<6(-6)	<6(-7)
^{132}Te	<5(-7)	<9(-7)	<2(-6)	<2(-6)	<4(-7)	<3(-7)
^{140}Ba	<2(-7)	<2(-6)	<2(-6)	<3(-6)	<7(-7)	<8(-7)
^{140}La	1.0 ± 0.4 (-6)	<6(-6)	<1(-5)	<6(-6)	<2(-6)	<2(-6)
^{141}Ce	<2(-7)	<6(-7)	<9(-7)	<8(-7)	<3(-7)	<2(-7)
^{239}Np	<2(-6)	<7(-6)	<8(-6)	<8(-6)	<3(-6)	<4(-6)
	<5(-7)	<7(-6)	<7(-6)	<4(-6)	<2(-6)	<3(-6)

* Radionuclide not measured.

a. Dip sample.

TABLE B.5-2
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 1 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time "A" 3-26-82 1014
^{131}I	<3(-7)
^{132}I	<2(-7)
^{134}Cs	2.7 ± 0.2 (-6)
^{136}Cs	<3(-7)
^{137}Cs	1.78 ± 0.04(-5)
^{51}Cr	<2(-6)
^{54}Mn	6 ± 1 (-7)
^{59}Fe	<3(-7)
^{58}Co	<2(-7)
^{60}Co	8.8 ± 0.3 (-6)
^{65}Zn	<4(-7)
^{95}Zr	<2(-7)
^{99}Nb	<2(-7)
^{103}Ru	<2(-7)
^{124}Sb	<3(-7)
^{132}Te	<3(-7)
^{140}Ba	<2(-7)
^{140}La	<6(-7)
^{141}Ce	<3(-7)
^{239}NP	<4(-7)
	<9(-7)

TABLE B.5-3
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date/Time 3-27-82 1107	3-27-82 1110	3-31-82 1005	4-6-82 0945	4-13-82 1000	4-28-82 1710
^{131}I	<3(-7)	<6(-7)	<4(-7)	<6(-7)	<5(-7)	2.6 ± 0.3 (-6)
^{132}I	<5(-7)	<7(-7)	<4(-6)	<1(-6)	<2(-6)	<2(-4)
^{134}Cs	9.2 ± 0.2 (-6)	8.4 ± 0.3 (-6)	1.70 ± 0.03(-5)	1.41 ± 0.04(-5)	9.5 ± 0.2 (-6)	4.71 ± 0.06(-5)
^{136}Cs	<6(-7)	<5(-7)	<5(-7)	<7(-7)	<7(-7)	<9(-7)
^{137}Cs	2.11 ± 0.07(-5)	2.00 ± 0.05(-5)	3.98 ± 0.05(-5)	3.5 ± 0.1 (-5)	2.21 ± 0.05(-5)	1.06 ± 0.01(-4)
^{51}Cr	<2(-6)	<3(-6)	<4(-6)	<7(-6)	<3(-6)	<5(-6)
^{54}Mn	4 ± 2 (-7)	<1(-6)	<5(-7)	<6(-7)	<6(-7)	1.02 ± 0.05(-5)
^{59}Fe	<5(-7)	<5(-7)	<7(-7)	<8(-7)	<9(-7)	<2(-6)
^{58}Co	<9(-7)	<7(-7)	<4(-7)	<6(-7)	<4(-7)	1.6 ± 0.5 (-6)
^{60}Co	1.15 ± 0.02(-4)	1.11 ± 0.02(-4)	1.46 ± 0.02(-4)	2.04 ± 0.04(-4)	9.2 ± 0.2 (-5)	6.11 ± 0.09(-4)
^{65}Zn	<1(-6)	<2(-6)	<2(-6)	<3(-6)	<3(-6)	1.8 ± 0.9 (-6)
^{95}Zr	<8(-7)	<7(-7)	<9(-7)	<2(-6)	<7(-7)	<2(-6)
^{95}Nb	<5(-7)	<4(-7)	<5(-7)	<5(-7)	<4(-7)	<7(-7)
^{99}Tc	<2(-7)	<4(-7)	<5(-7)	<6(-7)	<4(-7)	<2(-6)
^{103}Ru	<3(-7)	<3(-7)	<5(-7)	5 ± 3 (-7)	<3(-7)	<2(-6)
^{110}Ag	<6(-7)	<3(-7)	<6(-7)	<9(-7)	<6(-7)	<2(-6)
^{124}Sb	<3(-7)	<4(-7)	<4(-7)	<6(-7)	<6(-7)	<5(-7)
^{132}Te	<3(-7)	<3(-7)	<3(-7)	<7(-7)	<3(-7)	<1(-6)
^{140}Ba	<2(-6)	<2(-6)	<2(-6)	<2(-6)	1.5 ± 0.7 (-6)	<3(-6)
^{140}La	<3(-7)	<3(-7)	<3(-7)	<4(-7)	<2(-7)	<3(-7)
^{141}Ce	<4(-7)	<4(-7)	<4(-7)	<5(-7)	<3(-7)	<5(-7)
^{239}Np	<1(-6)	<2(-6)	<8(-7)	<9(-7)	<7(-7)	<3(-6)

TABLE B.5-3 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date/Time 5-1-82 0900	5-3-82 0934	5-6-82 1115	5-7-82 1040	5-10-82 1150	5-12-82 0949
^{131}I	3.28 ± 0.05(-4)	2.24 ± 0.02(-4)	2.54 ± 0.03(-4)	1.99 ± 0.01(-4)	2.1 ± 0.1 (-4)	2.18 ± 0.02(-4)
^{132}I	4.99 ± 0.09(-4)	*	2.73 ± 0.03(-4)	*	1.49 ± 0.03(-4)	1.27 ± 0.02(-4)
^{134}Cs	2.49 ± 0.03(-4)	4.21 ± 0.04(-4)	9.11 ± 0.06(-4)	6.20 ± 0.05(-4)	1.47 ± 0.01(-3)	1.22 ± 0.01(-3)
^{136}Cs	3.99 ± 0.07(-5)	6.5 ± 0.1 (-5)	1.35 ± 0.01(-4)	8.87 + 0.07(-5)	1.61 ± 0.01(-4)	1.19 ± 0.01(-4)
^{137}Cs	2.89 ± 0.07(-4)	5.28 ± 0.09(-4)	1.16 ± 0.02(-3)	8.0 ± 0.1 (-4)	1.83 ± 0.01(-3)	1.43 ± 0.03(-3)
^{51}Cr	9.3 ± 0.8 (-5)	2.0 ± 0.8 (-5)	1.4 ± 0.4 (-5)	1.2 ± 0.5 (-5)	1.9 ± 0.7 (-5)	1.36 ± 0.06(-4)
^{54}Mn	6.00 ± 0.08(-4)	6.01 ± 0.08(-4)	7.05 ± 0.09(-4)	4.87 ± 0.05(-4)	3.82 ± 0.04(-4)	2.80 ± 0.03(-4)
^{59}Fe	6.5 ± 0.2 (-5)	1.4 ± 0.1 (-5)	7 ± 2 (-6)	4.9 ± 0.6 (-6)	5 ± 1 (-6)	7.2 ± 0.1 (-5)
^{58}Co	2.3 ± 0.1 (-4)	2.74 ± 0.03(-4)	3.42 ± 0.03(-4)	2.56 ± 0.03(-4)	2.32 ± 0.01(-4)	1.32 ± 0.03(-4)
^{60}Co	1.12 ± 0.01(-3)	1.33 ± 0.02(-3)	1.85 ± 0.03(-3)	1.39 ± 0.02(-3)	1.36 ± 0.01(-3)	8.31 ± 0.09(-4)
^{65}Zn	9.2 ± 0.2 (-5)	1.22 ± 0.04(-4)	1.36 ± 0.02(-4)	9.2 ± 0.2 (-5)	8.06 ± 0.08(-5)	4.5 ± 0.2 (-5)
^{95}Zr	<3(-6)	<6(-6)	<3(-6)	<2(-6)	<3(-6)	2 ± 1 (-6)
^{95}Nb	<3(-6)	<2(-6)	<2(-6)	<8(-7)	<2(-6)	4.5 ± 0.6 (-6)
^{99}Tc	8.07 ± 0.05(-4)	8 ± 1 (-4)	2.48 ± 0.01(-4)	6.0 ± 0.6 (-4)	1.02 ± 0.01(-4)	9.29 ± 0.07(-5)
^{103}Ru	4.5 ± 0.7 (-6)	<2(-6)	<2(-6)	<2(-6)	<4(-6)	<6(-6)
^{110}Ag	<2(-6)	<2(-7)	<3(-6)	<2(-6)	<3(-6)	<2(-6)
^{124}Sb	<2(-6)	<1(-6)	<2(-6)	<8(-6)	<2(-6)	1.2 ± 0.3 (-6)
^{132}Te	<2(-6)	2.8 ± 0.9 (-6)	1.7 ± 0.5 (-6)	2.7 ± 0.5 (-6)	<3(-6)	<2(-6)
^{140}Ba	3.7 ± 0.3 (-5)	3.0 ± 0.3 (-5)	2.7 ± 0.3 (-5)	2.3 ± 0.2 (-5)	1.7 ± 0.4 (-5)	<9(-6)
^{140}La	3.6 ± 0.3 (-6)	<2(-6)	3.3 ± 0.2 (-6)	<2(-6)	<1(-6)	<9(-7)
^{141}Ce	<9(-6)	<7(-6)	<6(-6)	<8(-6)	<8(-6)	<2(-5)
^{239}Np	8.3 ± 0.3 (-5)	8.2 ± 0.3 (-5)	4.8 ± 0.1 (-5)	3.1 ± 0.2 (-5)	2.4 ± 0.2 (-5)	9 ± 2 (-6)

TABLE B.5-3 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date/Time 5-17-82 1200	5-24-82 1155	5-28-82 1050	6-1-82 1007	6-5-82 1024	6-20-82 1144
^{131}I	8.03 ± 0.05(-4)	3.86 ± 0.07(-4)	1.73 ± 0.01(-4)	3.89 ± 0.03(-5)	1.56 ± 0.03(-5)	9 ± 2 (-6)
^{132}I	5.4 ± 0.1 (-5)	1.4 ± 0.3 (-5)	4.8 ± 0.5 (-6)	<2(-6)	*	<2(-6)
^{134}Cs	4.80 ± 0.04(-4)	3.24 ± 0.08(-4)	1.97 ± 0.01(-4)	2.49 + 0.02(-4)	1.99 ± 0.02(-4)	7.29 ± 0.06(-4)
^{136}Cs	4.31 ± 0.09(-5)	1.9 ± 0.2 (-5)	9.1 ± 0.2 (-6)	9.7 + 0.2 (-6)	6.5 ± 0.2 (-6)	1.08 ± 0.04(-5)
^{137}Cs	5.46 ± 0.09(-4)	3.7 ± 0.2 (-4)	2.10 ± 0.01(-4)	2.97 ± 0.03(-4)	2.18 ± 0.02(-4)	8.7 ± 0.1 (-4)
^{51}Cr	2.00 ± 0.07(-4)	1.49 ± 0.03(-4)	6.5 ± 0.1 (-5)	4.0 ± 0.1 (-5)	3 ± 2 (-6)	1.5 ± 0.4 (-5)
^{54}Mn	2.38 ± 0.05(-4)	1.62 ± 0.03(-4)	9.4 ± 0.3 (-5)	9.1 ± 0.2 (-5)	2.84 ± 0.05(-5)	2.70 ± 0.07(-5)
^{59}Fe	1.09 ± 0.01(-4)	8.1 ± 0.3 (-5)	3.0 ± 0.2 (-5)	1.93 ± 0.03(-5)	2.1 ± 0.4 (-6)	7.0 ± 0.5 (-6)
^{58}Co	1.12 ± 0.01(-4)	7.65 ± 0.06(-5)	6.0 ± 0.2 (-5)	4.53 ± 0.05(-5)	2.15 ± 0.07(-5)	1.24 ± 0.05(-5)
^{60}Co	8.4 ± 0.2 (-4)	6.30 ± 0.03(-4)	3.98 ± 0.04(-4)	4.14 ± 0.05(-4)	2.46 ± 0.04(-4)	2.53 ± 0.05(-4)
^{65}Zn	4.0 ± 0.2 (-5)	2.67 ± 0.04(-5)	2.51 ± 0.05(-5)	2.01 ± 0.05(-5)	1.02 ± 0.07(-5)	4 ± 1 (-6)
^{95}Zr	3.5 ± 0.9 (-6)	4.9 ± 0.3 (-6)	1.26 ± 0.05(-6)	9 ± 3 (-7)	<7(-7)	<2(-6)
^{95}Nb	6.0 ± 0.4 (-6)	6.5 ± 0.7 (-6)	2.5 ± 0.5 (-6)	1.5 ± 0.2 (-6)	<4(-7)	1.2 ± 0.5 (-6)
^{99}Tc	3.24 ± 0.05(-5)	6.2 ± 0.8 (-6)	2.6 ± 0.3 (-6)	5 ± 2 (-7)	<9(-6)	<1(-6)
^{103}Ru	8.0 ± 0.6 (-6)	8.2 ± 0.8 (-6)	3.4 ± 0.2 (-6)	1.9 ± 0.2 (-6)	<7(-7)	<2(-6)
^{110}Ag	<2(-6)	1.6 ± 0.6 (-6)	<1(-6)	<5(-7)	<8(-7)	<1(-6)
^{124}Sb	1.4 ± 0.3 (-6)	1.5 ± 0.2 (-6)	6 ± 2 (-7)	4.6 ± 0.9 (-7)	3 ± 1 (-7)	5 ± 2 (-7)
^{132}Te	<7(-7)	<2(-6)	<7(-7)	<3(-7)	<7(-7)	<9(-7)
^{140}Ba	<7(-6)	<4(-6)	<3(-6)	<3(-6)	<3(-6)	<6(-6)
^{140}La	<1(-6)	<1(-6)	<3(-7)	<4(-7)	<6(-7)	<2(-7)
^{141}Ce	3.3 ± 0.5 (-6)	2.5 ± 0.4 (-6)	1.2 ± 0.4 (-6)	1.3 ± 0.2 (-6)	<9(-7)	<2(-6)
^{239}Np	<3(-6)	<5(-6)	<3(-6)	<9(-7)	<2(-6)	<3(-6)

TABLE B.5-3 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET
(microcuries/gram)

Nuclide	Date/Time 7-5-82 1130	7-15-82 0947	10-6-82[a] 0930	10-20-82 1210	10-22-82 1035	10-25-82 1424
^{131}I	2.1 ± 0.2 (-6)	7.4 ± 0.9 (-7)	<2(-5)	<5(-6)	<2(-5)	<3(-5)
^{132}I	<6(-7)	<6(-7)	*	<4(-3)	<3(-5)	<6(-3)
^{134}Cs	7.30 ± 0.05(-5)	2.87 ± 0.04(-5)	1.42 ± 0.02(-2)	1.31 + 0.01(-2)	1.58 ± 0.01(-2)	1.50 ± 0.01(-2)
^{136}Cs	<6(-7)	<4(-7)	<1(-4)	<4(-6)	<2(-5)	<9(-6)
^{137}Cs	8.64 ± 0.07(-5)	3.46 ± 0.04(-5)	1.86 ± 0.04(-2)	1.81 ± 0.01(-2)	2.08 ± 0.02(-2)	1.99 ± 0.03(-2)
^{51}Cr	3 ± 1 (-6)	<3(-6)	<1(-4)	<3(-5)	<8(-5)	<1(-4)
^{54}Mn	6.3 ± 0.2 (-6)	3.5 ± 0.2 (-6)	3.12 ± 0.05(-4)	2.29 ± 0.01(-4)	1.96 ± 0.05(-4)	1.51 ± 0.05(-4)
^{59}Fe	<2(-6)	9 ± 1 (-7)	<2(-5)	6 ± 2 (-6)	<1(-5)	<5(-6)
^{58}Co	3.2 ± 0.2 (-6)	7.2 ± 0.8 (-7)	1.41 ± 0.06(-4)	2.4 ± 0.2 (-5)	5.2 ± 0.5 (-5)	1.2 ± 0.2 (-5)
^{60}Co	1.11 ± 0.02(-4)	1.64 ± 0.04(-5)	3.34 ± 0.03(-2)	2.51 ± 0.01(-3)	1.64 ± 0.01(-2)	3.58 ± 0.03(-3)
^{65}Zn	2.1 ± 0.4 (-6)	<4(-7)	3.5 ± 0.3 (-4)	1.8 ± 0.3 (-5)	1.7 ± 0.3 (-4)	2.3 ± 0.6 (-5)
^{95}Zr	<9(-7)	<3(-7)	<2(-5)	<6(-6)	<2(-5)	<1(-5)
^{95}Nb	<4(-7)	<2(-7)	<9(-6)	<5(-6)	<2(-5)	9 ± 3 (-6)
^{99}Tc	<3(-7)	<3(-7)	<3(-4)	<4(-5)	<2(-5)	<2(-6)
^{103}Ru	<4(-7)	<3(-7)	<3(-5)	<7(-6)	<1(-5)	<2(-5)
^{110}Ag	<9(-7)	<3(-7)	<2(-5)	<7(-6)	<9(-6)	<9(-6)
^{124}Sb	2 ± 1 (-7)	<4(-7)	<3(-6)	<2(-6)	<3(-6)	<2(-6)
^{132}Te	<4(-7)	<2(-7)	<2(-5)	<4(-6)	<2(-5)	<1(-5)
^{140}Ba	<2(-6)	<2(-6)	<4(-5)	<2(-5)	<6(-5)	<4(-5)
^{140}La	<2(-7)	<2(-7)	<4(-6)	<3(-6)	<2(-6)	<2(-6)
^{141}Ce	<6(-7)	1.8 ± 0.9 (-7)	<2(-5)	<9(-6)	<2(-5)	<2(-5)
^{239}Np	<8(-7)	<5(-7)	<4(-5)	<2(-5)	<4(-5)	<5(-5)

* Radionuclide not measured.

a. Dip sample.

TABLE B.5-4
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET
(microcuries/gram)

	Filter Demineralizer/Date/Time					
Nuclide	"B" 3-27-82 1107	"B" 3-27-82 1110	"B" 3-31-82 1009	(Header) 4-6-82 0940	"B" 4-13-82 0958	"A" 4-28-82 1710
^{131}I	<2(-7)	<2(-4)	<5(-7)	<2(-7)	<2(-7)	6 ± 2 (-7)
^{132}I	<5(-7)	<9(-7)	<3(-6)	<6(-7)	<9(-7)	<6(-5)
^{134}Cs	3.7 ± 0.2 (-6)	3.7 ± 0.2 (-6)	1.25 ± 0.03(-5)	3.3 + 0.2 (-6)	4.6 ± 0.2 (-6)	6.2 ± 0.2 (-6)
^{136}Cs	<3(-7)	<3(-7)	<4(-7)	<4(-7)	<2(-7)	<4(-7)
^{137}Cs	8.4 ± 0.3 (-6)	8.5 ± 0.2 (-6)	2.84 ± 0.06(-5)	8.3 ± 0.3 (-6)	1.06 ± 0.03(-5)	1.35 ± 0.04(-5)
^{51}Cr	<2(-6)	<2(-6)	<2(-6)	<2(-6)	<2(-6)	<4(-6)
^{54}Mn	5.1 ± 0.3 (-6)	2.92 ± 0.09(-6)	1.2 ± 0.4 (-6)	3 ± 1 (-7)	<2(-7)	1.0 ± 0.3 (-6)
^{59}Fe	<6(-7)	<3(-7)	<7(-7)	4 ± 2 (-7)	<3(-7)	<4(-7)
^{58}Co	<2(-7)	<3(-7)	<5(-7)	<2(-7)	1.6 ± 0.6 (-7)	5 ± 2 (-7)
^{60}Co	4.0 ± 0.1 (-5)	2.91 ± 0.03(-5)	6 ± 1 (-5)	1.83 ± 0.05(-5)	4.5 ± 0.2 (-6)	7.17 ± 0.08(-5)
^{65}Zn	6 ± 3 (-7)	6 ± 3 (-7)	<2(-6)	<6(-7)	<4(-7)	1.0 ± 0.3 (-6)
^{95}Zr	<4(-7)	<4(-7)	<7(-7)	<3(-7)	<3(-7)	<5(-7)
^{95}Nb	<2(-7)	<2(-7)	<4(-7)	<2(-7)	<2(-7)	<4(-7)
^{99}Tc	<3(-6)	<2(-7)	<4(-7)	<3(-7)	<3(-7)	<3(-6)
^{103}Ru	<2(-7)	<3(-7)	<3(-7)	<2(-7)	<2(-7)	<3(-7)
^{110}Ag	<3(-7)	<2(-7)	<5(-7)	<4(-7)	<2(-7)	<3(-7)
^{124}Sb	<3(-7)	<3(-7)	<4(-7)	<5(-7)	<6(-7)	<3(-7)
^{132}Te	<2(-7)	<2(-7)	<3(-7)	<2(-7)	<3(-7)	<3(-7)
^{140}Ba	<6(-7)	<6(-6)	<2(-7)	<6(-7)	<6(-7)	<2(-6)
^{141}La	<2(-7)	<2(-7)	<4(-7)	<2(-7)	<2(-7)	<3(-7)
^{239}Ce	<3(-7)	<3(-7)	<4(-7)	<4(-7)	<4(-7)	<3(-7)
^{239}Np	<9(-7)	<5(-7)	<9(-7)	<6(-7)	<6(-7)	<2(-6)

TABLE B.5-4 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	"B" 5-3-82 0938	"A" 5-3-82 0940	"A" 5-7-82 1042	"B" 5-7-82 1044	"A" 5-10-82 1154	"B" 5-10-82 1158
^{131}I	5.74 ± 0.08(-5)	6.28 ± 0.08(-5)	2.44 ± 0.01(-5)	2.53 ± 0.07(-5)	2.67 ± 0.02(-5)	5.2 ± 0.2 (-5)
^{132}I	*	*	*	*	*	*
^{134}Cs	4.23 ± 0.05(-4)	4.62 ± 0.04(-4)	3.67 ± 0.02(-4)	3.41 ± 0.03(-4)	1.59 ± 0.03(-3)	1.58 ± 0.02(-3)
^{136}Cs	6.15 ± 0.09(-5)	6.9 ± 0.1 (-5)	5.0 ± 0.2 (-5)	4.90 ± 0.07(-5)	1.76 ± 0.05(-4)	1.80 ± 0.08(-4)
^{137}Cs	5.22 ± 0.07(-4)	5.70 ± 0.08(-4)	4.23 ± 0.03(-4)	4.17 ± 0.04(-4)	2.01 ± 0.03(-3)	1.98 ± 0.03(-3)
^{51}Cr	8 ± 4 (-6)	<2(-5)	<6(-6)	<7(-6)	<2(-5)	<2(-5)
^{54}Mn	5.29 ± 0.09(-4)	4.12 ± 0.08(-4)	1.49 ± 0.01(-4)	1.81 ± 0.03(-4)	3.50 ± 0.08(-4)	3.5 ± 0.1 (-4)
^{59}Fe	<2(-6)	<2(-6)	<9(-7)	<2(-6)	<2(-6)	<2(-6)
^{58}Co	2.47 ± 0.05(-4)	2.02 ± 0.03(-4)	8.2 ± 0.1 (-5)	9.8 ± 0.2 (-5)	2.17 ± 0.04(-4)	2.15 ± 0.03(-4)
^{60}Co	1.18 ± 0.02(-3)	1.05 ± 0.01(-3)	4.48 ± 0.03(-4)	5.32 ± 0.08(-4)	1.21 ± 0.03(-3)	1.22 ± 0.01(-3)
^{65}Zn	1.07 ± 0.03(-4)	8.4 ± 0.2 (-5)	2.83 ± 0.02(-5)	3.7 ± 0.2 (-5)	7.6 ± 0.2 (-5)	7.0 ± 0.5 (-5)
^{95}Zr	<3(-6)	<2(-6)	<2(-6)	1.7 ± 0.7 (-6)	<2(-6)	<2(-6)
^{95}Nb	<2(-6)	<2(-6)	<7(-7)	<9(-7)	<2(-6)	<2(-6)
^{99}Tc	2.5 ± 0.8 (-5)	*	<2(-4)	*	<3(-4)	<6(-4)
^{103}Ru	<3(-6)	<2(-6)	<6(-7)	<2(-6)	<2(-6)	<3(-6)
^{110}Ag	<2(-6)	<2(-6)	<8(-7)	<1(-6)	<3(-6)	1.8 ± 0.7 (-6)
^{124}Sb	<7(-7)	<5(-7)	<3(-7)	<5(-7)	<9(-7)	<4(-7)
^{132}Te	3 ± 1 (-6)	<3(-6)	1.2 ± 0.4 (-6)	<3(-6)	1.7 ± 0.9 (-6)	<2(-6)
^{140}Ba	1.3 ± 0.2 (-5)	1.2 ± 0.3 (-5)	4 ± 2 (-6)	<7(-6)	9 ± 2 (-6)	6 ± 2 (-6)
^{140}La	<7(-6)	<7(-7)	<3(-6)	<3(-5)	<2(-6)	<2(-6)
^{141}Ce	<2(-6)	<2(-6)	<8(-7)	<9(-7)	<2(-6)	<2(-6)
^{239}Np	7.2 ± 0.5 (-5)	9.3 ± 0.2 (-5)	2.2 ± 0.1 (-5)	1.8 ± 0.5 (-5)	2.4 ± 0.3 (-5)	1.9 ± 0.3 (-5)

TABLE 8.5-4 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	"B" 5-12-82 0941	"A" 5-12-82 0945	"B" 5-17-82 1140	"A" 5-17-82[a] 1150	"A" 5-24-82 1200	"B" 5-24-82 1217
^{131}I	5.40 ± 0.04(-5)	3.02 ± 0.04(-5)	6.51 ± 0.03(-4)	5.17 ± 0.04(-5)	3.65 ± 0.03(-4)	7.71 ± 0.05(-5)
^{132}I	*	2.95 ± 0.08(-5)	3.06 ± 0.08(-5)	<4(-7)	4.4 ± 0.4 (-6)	2.6 ± 0.2 (-6)
^{134}Cs	3.38 ± 0.02(-4)	1.71 ± 0.02(-4)	1.68 ± 0.01(-4)	5.7 ± 0.1 (-6)	8.26 ± 0.09(-5)	5.71 ± 0.06(-5)
^{136}Cs	3.9 ± 0.2 (-5)	1.76 ± 0.02(-5)	1.46 ± 0.03(-5)	5.3 ± 0.8 (-7)	4.6 ± 0.3 (-6)	3.1 ± 0.2 (-6)
^{137}Cs	5.03 ± 0.06(-4)	2.08 ± 0.02(-4)	1.93 ± 0.04(-4)	6.7 ± 0.2 (-6)	9.5 ± 0.2 (-5)	6.6 ± 0.2 (-5)
^{51}Cr	<7(-6)	<4(-6)	<6(-6)	<1(-6)	<9(-6)	<3(-6)
^{54}Mn	4.40 ± 0.04(-5)	1.86 ± 0.05(-5)	1.43 ± 0.04(-5)	2.1 ± 0.5 (-7)	1.40 ± 0.09(-5)	7.9 ± 0.4 (-6)
^{59}Fe	7 ± 4 (-7)	<6(-7)	<7(-7)	<3(-7)	4.0 ± 0.4 (-6)	7 ± 2 (-7)
^{58}Co	2.66 ± 0.03(-5)	1.08 ± 0.03(-5)	1.19 ± 0.04(-5)	2.7 ± 0.5 (-7)	6.8 ± 0.6 (-6)	6.8 ± 0.3 (-6)
^{60}Co	1.76 ± 0.04(-4)	7.1 ± 0.2 (-5)	1.16 ± 0.02(-4)	1.7 ± 0.1 (-6)	8.0 ± 0.2 (-5)	7.4 ± 0.2 (-5)
^{65}Zn	1.09 ± 0.05(-5)	4.4 ± 0.4 (-6)	5.4 ± 0.6 (-6)	<2(-7)	4.9 ± 0.9 (-6)	1.9 ± 0.4 (-6)
^{95}Zr	<7(-7)	<5(-7)	<8(-7)	<3(-7)	<2(-6)	<5(-7)
^{95}Nb	<4(-7)	<4(-7)	<6(-7)	<2(-7)	<8(-7)	<7(-7)
^{99}Tc	4 ± 2 (-5)	1.9 ± 0.2 (-6)	2.1 ± 0.3 (-6)	<3(-7)	1.3 ± 0.3 (-6)	<3(-7)
^{103}Ru	<8(-7)	<9(-7)	<2(-6)	<2(-7)	<1(-6)	<4(-7)
^{110}Ag	7 ± 2 (-7)	<4(-7)	<5(-7)	<2(-7)	<2(-6)	<4(-7)
^{124}Sb	<4(-7)	2.5 ± 0.9 (-7)	<4(-7)	<2(-7)	<5(-7)	<4(-7)
^{132}Te	<9(-7)	<4(-7)	<8(-7)	<2(-7)	<7(-7)	<3(-7)
^{140}Ba	<2(-6)	<2(-6)	<2(-6)	<4(-7)	<5(-6)	<3(-6)
^{140}La	<9(-7)	<2(-7)	<3(-7)	<2(-7)	<5(-7)	<3(-7)
^{141}Ce	<7(-7)	<5(-7)	<7(-7)	<4(-7)	<2(-6)	<7(-7)
^{239}Np	4.9 ± 0.9 (-6)	2.7 ± 0.5 (-6)	<2(-6)	<5(-7)	<3(-6)	<1(-6)

TABLE B.5-4 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	"A" 5-28-82 0941	"B" 5-28-82 0945	"A" 6-1-82 1140	"A" 6-5-82 1150	"B" 6-5-82 1200	"B" 6-20-82 1217
^{131}I	1.39 ± 0.01(-4)	1.26 ± 0.01(-4)	4.94 ± 0.07(-6)	2.8 ± 0.2 (-6)	3.3 ± 0.1 (-6)	4.1 ± 0.4 (-6)
^{132}I	2.2 ± 0.2 (-6)	<9(-7)	<6(-7)	*	*	<2(-6)
^{134}Cs	5.67 ± 0.05(-5)	6.66 ± 0.07(-5)	3.38 ± 0.03(-5)	1.41 ± 0.01(-4)	8.76 ± 0.06(-5)	3.49 ± 0.03(-4)
^{136}Cs	2.5 ± 0.1 (-6)	2.37 ± 0.09(-6)	1.29 ± 0.05(-6)	5.2 ± 0.2 (-6)	2.88 ± 0.09(-6)	4.9 ± 0.3 (-6)
^{137}Cs	6.11 ± 0.07(-5)	6.1 ± 0.1 (-5)	3.74 ± 0.03(-5)	1.58 ± 0.02(-4)	9.2 ± 0.2 (-5)	3.95 ± 0.08(-4)
^{51}Cr	<3(-6)	5 ± 1 (-6)	<2(-6)	<4(-6)	<2(-6)	<7(-6)
^{54}Mn	4.1 ± 0.2 (-6)	2.1 ± 0.1 (-6)	6.1 ± 0.2 (-6)	6.2 ± 0.2 (-6)	4.8 ± 0.1 (-6)	3.3 ± 0.4 (-6)
^{59}Fe	<2(-7)	7 ± 1 (-7)	4.5 ± 0.8 (-7)	<4(-7)	<5(-7)	<7(-7)
^{58}Co	4.2 ± 0.1 (-6)	1.3 ± 0.1 (-6)	4.23 ± 0.09(-6)	6.5 ± 0.2 (-6)	4.8 ± 0.2 (-6)	1.8 ± 0.3 (-6)
^{60}Co	3.0 ± 0.6 (-5)	1.01 ± 0.02(-5)	3.68 ± 0.08(-5)	6 ± 2 (-5)	5.17 ± 0.07(-5)	4.13 ± 0.07(-5)
^{65}Zn	1.9 ± 0.2 (-6)	8 ± 4 (-7)	2.2 ± 0.1 (-6)	3.3 ± 0.3 (-6)	2.2 ± 0.2 (-6)	<2(-6)
^{95}Zr	<3(-7)	<6(-7)	<2(-7)	<3(-7)	<3(-7)	<9(-7)
^{95}Nb	<2(-7)	4.3 ± 0.2 (-6)	<2(-7)	<5(-7)	<2(-7)	<8(-7)
^{99}Tc	2.2 ± 0.9 (-7)	<4(-7)	<2(-7)	<6(-5)	<5(-6)	<6(-7)
^{103}Ru	<3(-7)	3 ± 2 (-7)	<2(-7)	<4(-7)	<4(-7)	<2(-6)
^{110m}Ag	<3(-7)	<3(-7)	<2(-7)	<4(-7)	<3(-7)	<1(-6)
^{124}Sb	3.0 ± 0.7 (-7)	2.00 ± 0.9 (-7)	<2(-7)	<4(-7)	<1(-7)	<9(-7)
^{132}Te	<4(-7)	<2(-7)	<1(-7)	<5(-7)	<2(-7)	<7(-5)
^{140}Ba	<8(-7)	<7(-7)	<5(-7)	<2(-6)	<7(-7)	<4(-6)
^{140}La	<7(-8)	<2(-7)	<5(-8)	<4(-7)	<2(-7)	<3(-7)
^{141}Ce	<3(-7)	<4(-7)	<3(-7)	<4(-7)	<3(-7)	<2(-6)
^{239}Np	<9(-7)	<2(-7)	<3(-7)	<2(-6)	<8(-7)	<2(-6)

TABLE B.5-4 (cont'd)
RADIONUCLIDE CONCENTRATIONS IN UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET
(microcuries/gram)

	Filter Demineralizer/Date/Time		
Nuclide	"A" 6-20-82 1142	"A" 7-5-82 1130	"B" 7-5-82 1130
^{131}I	6.7 ± 0.5 (-6)	1.5 ± 0.1 (-6)	1.7 ± 0.2 (-6)
^{132}I	<7(-7)	<2(-7)	<4(-7)
^{134}Cs	<2(-4)	<2(-5)	<2(-5)
^{136}Cs	2.8 ± 0.2 (-6)	<3(-7)	3 ± 1 (-7)
^{137}Cs	2.22 ± 0.04(-4)	1.81 ± 0.03(-5)	2.21 ± 0.07(-5)
^{51}Cr	<6(-6)	<2(-6)	<2(-6)
^{54}Mn	1.4 ± 0.2 (-6)	<2(-7)	<3(-7)
^{59}Fe	<6(-7)	<2(-7)	<2(-7)
^{58}Co	9 ± 2 (-7)	<2(-7)	<3(-7)
^{60}Co	1.40 ± 0.04(-5)	2.0 ± 0.1 (-6)	3.0 ± 0.3 (-6)
^{65}Zn	<6(-7)	<3(-7)	<3(-7)
^{95}Zr	<6(-7)	<2(-7)	<3(-7)
^{95}Nb	<6(-7)	1.7 ± 0.5 (-7)	<2(-7)
^{99}Tc	<5(-7)	<3(-7)	<2(-7)
^{103}Ru	<9(-7)	<2(-7)	<2(-7)
^{110}Ag	<9(-7)	<2(-7)	<3(-7)
^{124}Sb	<4(-7)	<4(-7)	<3(-7)
^{132}Te	<6(-7)	1.3 ± 0.6 (-7)	<2(-7)
^{140}Ba	<3(-6)	<5.(-7)	<9(-7)
^{140}La	<2(-7)	<2.(-7)	<2(-7)
^{141}Ce	<2(-6)	<2.(-7)	<4(-7)
^{239}Np	<2(-6)	<5(-7)	<1(-6)

* Radionuclide not measured.
a. Filter/Demineralizer not in operation.

Table B.5-5
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 3/27/82 Time: 1117			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	<4(-7)	<4(-8)	a	<3(-7)
^{134}Cs	7.16 ± 0.02(-6)	2.7 ± 0.1 (-7)	7.43 ± 0.02(-6)[b]	8.9 ± 0.2 (-6)
^{136}Cs	<4(-7)	<5(-8)	a	<5(-7)
^{137}Cs	1.58 ± 0.06(-5)	7.3 ± 0.8 (-7)	1.65 ± 0.06(-5)[b]	2.04 ± 0.04(-5)
^{51}Cr	<3(-6)	<3(-7)	a	<2(-6)
^{54}Mn	<7(-7)	3.5 ± 0.6 (-7)	a	4 ± 2 (-7)
^{59}Fe	<2(-7)	<7(-8)	a	<5(-7)
^{58}Co	<4(-7)	<4(-8)	a	<7(-7)
^{60}Co	3.70 ± 0.03(-5)	9.2 ± 0.1 (-6)	4.62 ± 0.03(-5)	1.13 ± 0.01(-4)
^{65}Zn	<7(-7)	<2(-7)	a	<1(-6)
^{99}Tc	<4(-7)	<5(-8)	a	<2(-7)
^{239}Np	1.0 ± 0.4 (-6)	<8(-8)	a	<1(-6)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 4/28/82 Time: 1710			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	1.9 ± 0.2 (-6)	3 ± 1 (-8)	1.9 ± 0.2 (-6)	2.6 ± 0.3 (-6)
^{134}Cs	4.60 ± 0.04(-5)	2.0 ± 0.2 (-7)	4.62 ± 0.04(-5)	4.71 ± 0.06(-5)
^{136}Cs	<4(-7)	4 ± 2 (-8)	a	<9(-7)
^{137}Cs	1.02 ± 0.02(-4)	5.4 ± 0.3 (-7)	1.02 ± 0.02(-4)	1.06 ± 0.01(-4)
^{51}Cr	<4(-6)	<2(-7)	a	<5(-6)
^{54}Mn	4.2 ± 0.2 (-6)	1.0 ± 0.2 (-7)	4.3 ± 0.2 (-6)[b]	1.02 ± 0.05(-5)
^{59}Fe	<3(-7)	<6(-8)	a	<2(-6)
^{58}Co	9 ± 2 (-7)	2 ± 1 (-8)	9 ± 2 (-7)	1.6 ± 0.5 (-6)
^{60}Co	3.05 ± 0.03(-4)	8.4 ± 0.4 (-7)	3.06 ± 0.03(-4)[b]	6.11 ± 0.09(-4)
^{65}Zn	<2(-6)	<9(-8)	a	1.8 ± 0.9 (-6)
^{99}Tc	<5(-5)	<2(-7)	a	<2(-6)
^{239}Np	<2(-6)	<1(-7)	a	<3(-6)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 5/3/82 Time: 0934			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	2.26 ± 0.02(-4)	9.4 ± 0.3 (-7)	2.3 ± 0.2 (-4)	2.24 ± 0.02(-4)
^{134}Cs	2.73 ± 0.02(-4)	1.55 ± 0.02(-5)	2.89 ± 0.02(-4)b	4.21 ± 0.04(-4)
^{136}Cs	4.40 ± 0.07(-5)	2.04 ± 0.05(-6)	4.60 ± 0.07(-5)b	6.5 ± 0.1 (-5)
^{137}Cs	3.36 ± 0.04(-4)	2.22 ± 0.03(-5)	3.58 ± 0.04(-4)b	5.28 ± 0.09(-4)
^{51}Cr	<6(-6)	3.08 ± 0.04(-5)	a	2.0 ± 0.8 (-5)
^{54}Mn	2.61 ± 0.06(-4)	3.03 ± 0.04(-5)	2.91 ± 0.06(-4)b	6.01 ± 0.08(-4)
^{59}Fe	<1(-6)	1.87 ± 0.03(-5)	a	1.4 ± 0.1 (-5)
^{58}Co	1.26 ± 0.02(-4)	7.2 ± 0.1 (-6)	1.33 ± 0.02(-4)b	2.74 ± 0.03(-4)
^{60}Co	5.91 ± 0.09(-4)	5.02 ± 0.07(-5)	6.41 ± 0.09(-4)b	1.33 ± 0.02(-3)
^{65}Zn	3.4 ± 0.2 (-5)	3.2 ± 0.2 (-6)	3.7 ± 0.2 (-5)b	1.22 ± 0.04(-4)
^{99}Tc	4.30 ± 0.08(-4)	<2(-6)	4.30 ± 0.08(-4)b	8 ± 1 (-4)
^{239}Np	6.5 ± 0.3 (-5)	<4(-7)	6.50 ± 0.03(-5)b	8.2 ± 0.3 (-5)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 5/10/82 Time: 1152			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	2.24 ± 0.02(-4)	9.6 ± 0.3 (-7)	2.25 ± 0.02(-4)	2.1 ± 0.1 (-4)
^{134}Cs	1.31 ± 0.01(-3)	4.10 ± 0.04(-5)	1.35 ± 0.01(-3)	1.47 ± 0.01(-3)
^{136}Cs	1.49 ± 0.01(-4)	4.7 ± 0.07(-6)	1.54 ± 0.01(-4)	1.61 ± 0.01(-4)
^{137}Cs	1.67 ± 0.02(-3)	6.8 ± 0.1 (-5)	1.81 ± 0.02(-3)	1.83 ± 0.01(-3)
^{51}Cr	<3(-5)	8.3 ± 0.4 (-6)	a	1.9 ± 0.7 (-5)
^{54}Mn	1.49 ± 0.02(-4)	1.46 ± 0.02(-5)	1.64 ± 0.02(-4)[b]	3.83 ± 0.03(-4)
^{59}Fe	<2(-6)	4.75 ± 0.06(-6)	a	5 ± 1 (-6)
^{58}Co	8.4 ± 0.2 (-5)	5.29 ± 0.07(-6)	8.9 ± 0.2 (-5)[b]	2.32 ± 0.01(-4)
^{60}Co	4.9 ± 0.1 (-4)	2.23 ± 0.05(-5)	5.2 ± 0.1 (-4)[b]	1.36 ± 0.01(-3)
^{65}Zn	2.6 ± 0.2 (-5)	1.96 ± 0.09(-6)	2.8 ± 0.2 (-5)[b]	8.06 ± 0.08(-5)
^{99}Tc	*	<5(-7)	a	1.02 ± 0.01(-4)
^{239}Np	<3(-5)	<8(-8)	a	2.44 ± 0.08(-5)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 5/17/82 Time: 1200			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	8.16 ± 0.06(-4)	1.72 ± 0.01(-5)	8.33 ± 0.06(-4)	8.03 ± 0.05(-4)
^{134}Cs	4.37 ± 0.03(-4)	2.44 ± 0.04(-5)	4.61 ± 0.03(-4)	4.80 ± 0.04(-4)
^{136}Cs	3.87 ± 0.05(-5)	1.4 ± 0.1 (-6)	4.01 ± 0.05(-5)	4.31 ± 0.09(-5)
^{137}Cs	5.22 ± 0.09(-4)	3.41 ± 0.04(-5)	5.56 ± 0.09(-4)	5.46 ± 0.09(-4)
^{51}Cr	2.70 ± 0.03(-5)	4.92 ± 0.03(-4)	5.19 ± 0.04(-4)b	2.00 ± 0.07(-4)
^{54}Mn	5.7 ± 0.1 (-5)	3.87 ± 0.05(-4)	4.44 ± 0.05(-4)b	2.38 ± 0.05(-4)
^{59}Fe	1.86 ± 0.08(-5)	2.65 ± 0.04(-4)	2.84 ± 0.04(-4)b	1.09 ± 0.01(-4)
^{58}Co	3.07 ± 0.06(-5)	1.03 ± 0.01(-4)	1.34 ± 0.01(-4)b	1.12 ± 0.01(-4)
^{60}Co	2.62 ± 0.04(-4)	4.47 ± 0.06(-4)	7.09 ± 0.07(-4)b	8.4 ± 0.2 (-4)
^{65}Zn	1.10 ± 0.07(-5)	2.48 ± 0.07(-5)	3.6 ± 0.1 (-5)	4.0 ± 0.2 (-5)
^{99}Tc	3.49 ± 0.08(-5)	<5(-6)	a	3.24 ± 0.05(-5)
^{239}Np	<2(-6)	<3(-7)	a	<3(-6)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 5/24/82
Time: 1155

Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	3.7 ± 0.1 (-4)	6.3 ± 0.1 (-6)	3.8 ± 0.1 (-4)	3.86 ± 0.07(-4)
^{134}Cs	3.15 ± 0.09(-4)	1.41 ± 0.04(-5)	3.29 ± 0.09(-4)	3.24 ± 0.08(-4)
^{136}Cs	1.7 ± 0.1 (-5)	7 ± 1 (-7)	1.8 ± 0.1 (-5)	1.9 ± 0.2 (-5)
^{137}Cs	3.5 ± 0.2 (-4)	1.30 ± 0.03(-5)	3.6 ± 0.2 (-4)	3.7 ± 0.2 (-4)
^{51}Cr	<3(-5)	1.74 ± 0.02(-4)	a	1.49 ± 0.03(-4)
^{54}Mn	2.9 ± 0.2 (-5)	1.38 ± 0.04(-4)	1.67 ± 0.04(-4)	1.62 ± 0.03(-4)
^{59}Fe	7 ± 2 (-6)	8.3 ± 0.2 (-5)	9.0 ± 0.3 (-5)	8.1 ± 0.3 (-5)
^{58}Co	1.3 ± 0.2 (-5)	4.3 ± 0.2 (-5)	5.6 ± 0.3 (-5)[b]	7.65 ± 0.06(-5)
^{60}Co	1.52 ± 0.03(-4)	2.20 ± 0.05(-4)	3.73 ± 0.06(-4)[b]	6.30 ± 0.03(-4)
^{65}Zn	6 ± 2 (-6)	1.23 ± 0.04(-5)	1.8 ± 0.2 (-5)[b]	2.67 ± 0.04(-5)
^{99}Tc	3 ± 1 (-6)	<3(-6)	a	6.2 ± 0.8 (-6)
^{239}Np	<5(-6)	<2(-7)	a	<5(-6)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 6/1/82 Time: 1107			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	3.74 ± 0.04(-5)	1.68 ± 0.01(-6)	3.91 ± 0.04(-5)	3.89 ± 0.03(-5)
^{134}Cs	2.39 ± 0.02(-4)	6.9 ± 0.1 (-6)	2.46 ± 0.04(-4)	2.49 ± 0.02(-4)
^{136}Cs	9.1 ± 0.2 (-6)	2.6 ± 0.2 (-7)	9.4 ± 0.2 (-6)	9.7 ± 0.2 (-6)
^{137}Cs	2.55 ± 0.04(-4)	8.1 ± 0.1 (-6)	2.64 ± 0.04(-4)b	2.97 ± 0.03(-4)
^{51}Cr	3 ± 1 (-6)	3.33 ± 0.03(-5)	3.6 ± 0.1 (-5)	4.0 ± 0.1 (-5)
^{54}Mn	2.01 ± 0.03(-5)	4.19 ± 0.09(-5)	6.20 ± 0.09(-5)b	9.1 ± 0.2 (-5)
^{59}Fe	1.6 ± 0.2 (-6)	1.66 ± 0.01(-5)	1.82 ± 0.02(-5)	1.93 ± 0.03(-5)
^{58}Co	1.21 ± 0.03(-5)	1.11 ± 0.02(-5)	2.32 ± 0.04(-5)b	4.53 ± 0.05(-5)
^{60}Co	1.11 ± 0.01(-4)	9.4 ± 0.2 (-5)	2.05 ± 0.02(-4)b	4.14 ± 0.05(-4)
^{65}Zn	5.9 ± 0.3 (-6)	3.6 ± 0.2 (-6)	9.50 ± 0.04(-6)b	2.01 ± 0.05(-5)
^{99}Tc	<7(-5)	<2(-6)	a	9 ± 3 (-7)
^{239}Np	<3(-6)	<6(-8)	a	<9(-7)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

Date: 6/5/82
Time: 1024

Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	1.53 ± 0.03(-5)	3.3 ± 0.1 (-7)	1.56 ± 0.03(-5)	1.56 ± 0.03(-5)
^{134}Cs	1.98 ± 0.01(-4)	9.5 ± 0.2 (-7)	1.99 ± 0.01(-4)	1.99 ± 0.02(-4)
^{136}Cs	6.6 ± 0.2 (-6)	<4(-8)	6.6 ± 0.2 (-6)	6.5 ± 0.2 (-6)
^{137}Cs	2.18 ± 0.02(-4)	1.24 ± 0.02(-6)	2.19 ± 0.02(-4)	2.18 ± 0.02(-4)
^{51}Cr	4 ± 1 (-6)	3.95 ± 0.09(-6)	8 ± 1 (-6)	3 ± 2 (-6)
^{54}Mn	1.47 ± 0.03(-5)	6.3 ± 0.1 (-6)	2.10 ± 0.03(-5)[b]	2.84 ± 0.05(-5)
^{59}Fe	<2(-6)	2.90 ± 0.04(-6)	a	2.1 ± 0.4 (-6)
^{58}Co	1.14 ± 0.03(-5)	1.16 ± 0.02(-6)	1.26 ± 0.03(-5)[b]	2.15 ± 0.07(-5)
^{60}Co	1.36 ± 0.02(-4)	1.06 ± 0.01(-5)	1.47 ± 0.02(-4)[b]	2.46 ± 0.04(-4)
^{65}Zn	5.2 ± 0.3 (-6)	5.4 ± 0.6 (-7)	5.7 ± 0.3 (-6)[b]	1.02 ± 0.07(-5)
^{99}Tc	<2(-5)	<3(-7)	a	<9(-6)
^{239}Np	<2(-6)	<7(-8)	a	<2(-6)

Table B.5-5 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER INLET FILTERED SAMPLES
(microcuries/gram)

	Date: 10/22/82 Time: 1035			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	<4(-5)	<1(-7)	a	<2(-5)
^{134}Cs	1.64 ± 0.01(-2)	6.73 ± 0.04(-5)	1.64 ± 0.01(-2)	1.58 ± 0.01(-2)
^{136}Cs	<2(-5)	<2(-7)	a	<2(-5)
^{137}Cs	2.21 ± 0.04(-4)	1.11 ± 0.01(-4)	2.22 ± 0.04(-2)	2.08 ± 0.02(-2)
^{51}Cr	<2(-4)	<6(-7)	a	<8(-5)
^{54}Mn	1.48 ± 0.07(-4)	1.82 ± 0.01(-5)	1.66 ± 0.07(-4)	1.96 ± 0.05(-4)
^{59}Fe	<2(-5)	<4(-7)	a	<1(-5)
^{58}Co	4.4 ± 0.7 (-5)	1.35 ± 0.08(-6)	4.5 ± 0.7 (-5)	5.2 ± 0.5 (-5)
^{60}Co	1.24 ± 0.01(-2)	3.38 ± 0.03(-4)	1.26 ± 0.01(-2)[b]	1.64 ± 0.01(-2)
^{65}Zn	4 ± 2 (-5)	8.8 ± 0.3 (-6)	5 ± 2 (-5)[b]	1.7 ± 0.4 (-4)
^{99}Tc	<4(-4)	<2(-6)	a	<2(-5)
^{239}Np	<8(-5)	<3(-7)	a	<4(-5)

* Radionuclide not measured.
a. Not determined because of significant less-than values for filtrate and/or filter samples.
b. Sum and grab values disagree by more than the greater of 2 (sum + grab) or 10 percent.

Table B.5-6
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

	Date: 4/28/82 Time: 1710			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	6 ± 1 (-7)	2.0 ± 0.8 (-8)	6 ± 1 (-7)	6 ± 2 (-7)
^{134}Cs	6.2 ± 0.2 (-6)	1.52 ± 0.01(-6)	7.7 ± 0.2 (-6)	6.2 ± 0.2 (-6)
^{136}Cs	<3(-7)	<3(-8)	a	<4(-7)
^{137}Cs	1.40 ± 0.03(-5)	3.54 ± 0.05(-6)	1.75 ± 0.03(-5)[b]	1.35 ± 0.04(-5)
^{51}Cr	<2(-6)	4.3 ± 0.5 (-7)	a	<4(-6)
^{54}Mn	7 ± 1 (-7)	3.27 ± 0.06(-6)	4.0 ± 0.1 (-6)[b]	1.0 ± 0.3 (-6)
^{59}Fe	<3(-7)	1.4 ± 0.2 (-7)	a	<4(-7)
^{58}Co	<4(-7)	1.4 ± 0.1 (-7)	a	5 ± 2 (-7)
^{60}Co	3.95 ± 0.09(-5)	2.25 ± 0.03(-5)	4.1 ± 0.1 (-5)[b]	7.17 ± 0.08(-5)
^{65}Zn	<1(-6)	4.32 ± 0.03(-7)	a	1.0 ± 0.3 (-6)
^{99}Tc	<2(-5)	<6(-7)	a	<2(-7)
^{239}Np	<1(-6)	<2(-7)	a	<2(-6)

Table B.5-6 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

Nuclide	Date: 5/3/82 Time: 0940 Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	6.2 ± 0.2 (-5)	3.6 ± 0.2 (-7)	6.6 ± 0.2 (-5)	6.28 ± 0.08(-5)
^{134}Cs	3.62 ± 0.03(-4)	2.02 ± 0.02(-5)	3.82 ± 0.03(-4)[b]	4.62 ± 0.04(-4)
^{136}Cs	5.41 ± 0.09(-5)	2.58 ± 0.03(-6)	5.67 ± 0.09(-5)[b]	6.9 ± 0.1 (-5)
^{137}Cs	4.59 ± 0.07(-4)	2.90 ± 0.04(-5)	4.88 ± 0.07(-4)[b]	5.70 ± 0.08(-4)
^{51}Cr	<9(-6)	6 ± 1 (-7)	a	<2(-5)
^{54}Mn	1.94 ± 0.03(-4)	5.19 ± 0.09(-6)	1.99 ± 0.03(-4)[b]	4.12 ± 0.08(-4)
^{59}Fe	<3(-6)	3.5 ± 0.3 (-7)	a	<2(-6)
^{58}Co	9.1 ± 0.2 (-5)	2.95 ± 0.03(-6)	1.1 ± 0.2 (-4)[b]	2.02 ± 0.03(-4)
^{60}Co	4.70 ± 0.09(-4)	1.52 ± 0.03(-5)	4.85 ± 0.09(-4)[b]	1.05 ± 0.01(-3)
^{65}Zn	2.1 ± 0.2 (-5)	1.30 ± 0.07(-6)	2.2 ± 0.2 (-5)[b]	8.4 ± 0.2 (-5)
^{99}Tc	2.7 ± 0.9 (-5)	<2.(-7)	2.7 ± 0.9 (-5)	2.5 ± 0.8 (-5)
^{239}Np	8.4 ± 0.2 (-5)	1.8 ± 0.3 (-7)	8.4 ± 0.2 (-5)	9.3 ± 0.2 (-5)

Table B.5-6 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

	Date: 5/10/82 Time: 1156			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	2.72 ± 0.06(-5)	3.8 ± 0.3 (-7)	2.76 ± 0.06(-5)	2.67 ± 0.02(-5)
^{134}Cs	1.44 ± 0.01(-3)	4.78 ± 0.03(-5)	1.49 ± 0.01(-3)	1.58 ± 0.03(-3)
^{136}Cs	1.16 ± 0.02(-4)	5.25 ± 0.05(-6)	1.66 ± 0.02(-4)	1.76 ± 0.05(-4)
^{137}Cs	1.85 ± 0.02(-3)	8.3 ± 0.2 (-5)	1.93 ± 0.02(-3)	2.01 ± 0.03(-3)
^{51}Cr	<2(-5)	<7(-7)	a	<2(-5)
^{54}Mn	1.37 ± 0.01(-4)	4.38 ± 0.05(-6)	1.41 ± 0.01(-4)[b]	3.50 ± 0.08(-4)
^{59}Fe	<2(-6)	<2(-7)	a	<2(-6)
^{58}Co	7.9 ± 0.2 (-5)	2.37 ± 0.04(-6)	8.1 ± 0.2 (-5)[b]	2.17 ± 0.04(-4)
^{60}Co	4.47 ± 0.09(-4)	1.28 ± 0.03(-5)	4.60 ± 0.09(-4)[b]	1.21 ± 0.03(-3)
^{65}Zn	2.66 ± 0.07(-5)	1.27 ± 0.06(-6)	2.79 ± 0.07(-5)[b]	7.6 ± 0.3 (-5)
^{99}Tc	*	<2(-7)	a	<3(-4)
^{239}Np	1.5 ± 0.3 (-5)	<8.(-8)	1.5 ± 0.3 (-5)	2.4 ± 0.3 (-5)

Table B.5-6 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

Date: 5/17/82
Time: 1150

Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	5.41 ± 0.07(-5)	2.5 ± 0.2 (-7)	5.44 ± 0.07(-5)	5.17 ± 0.04(-5)
^{134}Cs	5.0 ± 0.1 (-6)	5.2 ± 0.2 (-7)	5.6 ± 0.1 (-6)[b]	6.7 ± 0.2 (-6)
^{136}Cs	4.3 ± 0.6 (-7)	<5(-8)	a	5.3 ± 0.8 (-7)
^{137}Cs	6.1 ± 0.2 (-6)	7.0 ± 0.4 (-7)	6.8 ± 0.2 (-6)	6.7 ± 0.2 (-6)
^{51}Cr	<2(-6)	<2(-7)	a	<1(-6)
^{54}Mn	<2(-7)	1.1 ± 0.1 (-7)	a	2.1 ± 0.5 (-7)
^{59}Fe	<2(-7)	5 ± 1 (-8)	a	<3(-7)
^{58}Co	<2(-7)	3.8 ± 0.8 (-8)	a	2.7 ± 0.5 (-7)
^{60}Co	6.1 ± 0.9 (-7)	1.8 ± 0.2 (-7)	7.9 ± 0.9 (-7)[b]	1.7 ± 0.2 (-6)
^{65}Zn	<2(-7)	<4(-8)	a	<2(-7)
^{99}Tc	<9(-7)	<3(-8)	a	<3(-7)
^{239}Np	<6(-7)	<6(-8)	a	<5(-7)

Table B.5-6 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

	Date: 5/24/82 Time: 1200			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	3.7 ± 0.1 (-4)	1.17 ± 0.05(-5)	3.8 ± 0.1 (-4)	3.65 ± 0.03(-4)
^{134}Cs	7.2 ± 0.2 (-5)	1.38 ± 0.03(-5)	8.6 ± 0.2 (-5)	8.26 ± 0.09(-5)
^{136}Cs	3.8 ± 0.3 (-6)	4.8 ± 0.6 (-7)	4.3 ± 0.3 (-6)	4.6 ± 0.3 (-6)
^{137}Cs	8.4 ± 0.3 (-5)	1.96 ± 0.08(-5)	1.04 ± 0.03(-4)	9.5 ± 0.2 (-5)
^{51}Cr	<6(-6)	1.24 ± 0.04(-5)	a	<1(-5)
^{54}Mn	3.7 ± 0.4 (-6)	1.96 ± 0.08(-5)	2.33 ± 0.09(-5)[b]	1.40 ± 0.09(-5)
^{59}Fe	<9(-7)	9.3 ± 0.3 (-6)	a	4.0 ± 0.4 (-6)
^{58}Co	1.0 ± 0.2 (-6)	7.1 ± 0.3 (-6)	8.1 ± 0.4 (-6)	6.8 ± 0.6 (-6)
^{60}Co	2.20 ± 0.07(-5)	6.7 ± 0.2 (-5)	8.9 ± 0.2 (-5)	8.0 ± 0.2 (-5)
^{65}Zn	<2(-6)	3.4 ± 0.2 (-6)	a	4.9 ± 0.9 (-6)
^{99}Tc	<2(-6)	5 ± 2 (-7)	a	1.3 ± 0.3 (-6)
^{239}Np	<4(-6)	<2(-7)	a	<3(-6)

Table B.5-6 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

Nuclide	Date: 6/1/82 Time: 1113			
	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	4.85 ± 0.07(-6)	4.8 ± 0.1 (-7)	5.33 ± 0.07(-6)	4.94 ± 0.07(-6)
^{134}Cs	3.22 ± 0.03(-5)	4.09 ± 0.05(-6)	3.63 ± 0.03(-5)	3.38 ± 0.03(-5)
^{136}Cs	1.28 ± 0.04(-6)	1.3 ± 0.1 (-7)	1.41 ± 0.04(-6)	1.29 ± 0.05(-6)
^{137}Cs	3.42 ± 0.06(-5)	5.33 ± 0.08(-6)	3.95 ± 0.06(-5)	3.74 ± 0.03(-5)
^{51}Cr	<6(-7)	1.34 ± 0.06(-6)	a	<2(-6)
^{54}Mn	2.2 ± 0.5 (-6)	2.97 ± 0.04(-6)	5.20 ± 0.05(-6)[b]	6.1 ± 0.2 (-6)
^{59}Fe	1.6 ± 0.5 (-7)	8.5 ± 0.2 (-7)	1.01 ± 0.05(-6)[b]	4.5 ± 0.8 (-7)
^{58}Co	1.31 ± 0.04(-6)	1.13 ± 0.02(-6)	2.44 ± 0.04(-6)[b]	4.23 ± 0.09(-6)
^{60}Co	1.23 ± 0.02(-5)	9.7 ± 0.2 (-6)	2.20 ± 0.03(-5)[b]	3.68 ± 0.08(-5)
^{65}Zn	1.1 ± 0.1 (-6)	5.3 ± 0.3 (-7)	1.6 ± 0.1 (-6)[b]	2.2 ± 0.1 (-6)
^{99}Tc	<3(-6)	<2(-6)	a	<2(-7)
^{239}Np	<4(-7)	<6(-8)	a	<3(-7)

Table B.5-6 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "A" FILTERED SAMPLES
(microcuries/gram)

	Date: 6/5/82 Time: 1028			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	2.3 ± 0.3 (-6)	3.4 ± 0.6 (-8)	2.3 ± 0.3 (-6)	2.7 ± 0.2 (-6)
^{134}Cs	1.42 ± 0.01(-4)	1.74 ± 0.07(-7)	1.42 ± 0.01(-4)	1.41 ± 0.01(-4)
^{136}Cs	4.7 ± 0.3 (-6)	<2(-8)	4.7 ± 0.3 (-6)	5.2 ± 0.2 (-6)
^{137}Cs	1.55 ± 0.02(-4)	2.22 ± 0.09(-7)	1.55 ± 0.02(-4)	1.58 ± 0.02(-4)
^{51}Cr	<4(-7)	<2(-7)	a	<4(-6)
^{54}Mn	6.0 ± 0.3 (-6)	4.2 ± 0.6 (-8)	6.0 ± 0.3 (-6)	6.2 ± 0.2 (-6)
^{59}Fe	<4(-8)	<4(-8)	a	<4(-7)
^{58}Co	5.4 ± 0.2 (-6)	2.2 ± 0.5 (-8)	5.4 ± 0.2 (-6)[b]	6.5 ± 0.2 (-6)
^{60}Co	5.9 ± 0.2 (-5)	1.9 ± 0.1 (-7)	5.9 ± 0.2 (-5)	6.4 ± 0.1 (-5)
^{65}Zn	1.7 ± 0.5 (-6)	<3(-8)	a	3.3 ± 0.3 (-6)
^{99}Tc	<2(-4)	<4(-7)	a	<6(-5)
^{239}Np	<3(-6)	<7(-8)	a	<2(-6)

* Radionuclide not measured.
a. Not determined because of significant less-than values for filtrate and/or filter samples.
b. Sum and grab values disagree by more than the greater of 2 (sum + grab) or 10 percent.

Table B.5-7
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "B" FILTERED SAMPLES
(microcuries/gram)

	Date: 3/27/82 Time: 1107			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	<3(-7)	<3(-8)	a	<2(-7)
^{134}Cs	2.3 ± 0.1 (-6)	<9(-8)	a	3.7 ± 0.2 (-6)
^{136}Cs	<2(-7)	<6(-8)	a	<3(-7)
^{137}Cs	5.6 ± 0.3 (-6)	3.3 ± 0.3 (-7)	5.9 ± 0.3 (-6)[b]	8.5 ± 0.2 (-6)
^{51}Cr	<2(-6)	<2(-7)	a	<2(-6)
^{54}Mn	<2(-7)	2.26 ± 0.07(-6)	a	3.10 ± 0.09(-6)
^{59}Fe	<4(-7)	<2(-7)	a	<3(-7)
^{58}Co	<2(-7)	<5(-8)	a	<2(-7)
^{60}Co	5.2 ± 0.3 (-6)	1.18 ± 0.02(-5)	1.7 ± 0.4 (-5)[b]	3.00 ± 0.03(-5)
^{65}Zn	<5(-7)	<2(-7)	a	6 ± 2 (-7)
^{99}Tc	<2(-7)	<3(-5)	a	<2(-6)
^{239}Np	<8(-7)	<7(-8)	a	<5(-7)

Table B.5-7 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "B" FILTERED SAMPLES
(microcuries/gram)

	Date: 5/3/82 Time: 0938			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	6.30 ± 0.08(-5)	3.6 ± 0.3 (-7)	6.68 ± 0.09(-5)[b]	5.74 ± 0.08(-5)
^{134}Cs	3.47 ± 0.03(-4)	2.48 ± 0.02(-5)	3.71 ± 0.03(-4)[b]	4.23 ± 0.05(-4)
^{136}Cs	5.13 ± 0.07(-5)	3.43 ± 0.05(-6)	5.47 ± 0.07(-5)	6.15 ± 0.09(-5)
^{137}Cs	4.19 ± 0.07(-4)	3.49 ± 0.04(-5)	4.54 ± 0.07(-4)[b]	5.22 ± 0.07(-4)
^{51}Cr	<7(-6)	4 ± 1 (-7)	a	8 ± 4 (-6)
^{54}Mn	2 42 ± 0.03(-4)	4.94 ± 0.07(-6)	2.47 ± 0.03(-4)[b]	5.29 ± 0.09(-4)
^{59}Fe	<8(-7)	1.1 ± 0.2 (-7)	a	<2(-6)
^{58}Co	1.11 ± 0.01(-4)	2.30 ± 0.04(-6)	1.13 ± 0.01(-4)[b]	2.47 ± 0.05(-4)
^{60}Co	5.27 ± 0.06(-4)	1.07 ± 0.02(-5)	5.38 ± 0.06(-4)[b]	1.18 ± 0.02(-3)
^{65}Zn	2.7 ± 0.1 (-5)	1.21 ± 0.05(-6)	2.8 ± 0.1 (-5)[b]	1.07 ± 0.03(04)
^{99}Tc	<6(-5)	<6(-7)	a	b
^{239}Np	7.7 ± 0.3 (-5)	2.6 ± 0.3 (-7)	7.7 ± 0.3 (-5)	7.2 ± 0.5 (-5)

Table B.5-7 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "B" FILTERED SAMPLES
(microcuries/gram)

	Date: 5/10/82 Time: 1200			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	5.44 ± 0.06(-5)	4.7 ± 0.4 (-7)	5.49 ± 0.06(-5)	5.2 ± 0.2 (-5)
^{134}Cs	1.40 ± 0.01(-3)	5.61 ± 0.03(-5)	1.46 ± 0.01(-3)	1.58 ± 0.02(-3)
^{136}Cs	1.59 ± 0.04(-4)	6.42 ± 0.08(-6)	1.65 ± 0.04(-4)	1.80 ± 0.08(-4)
^{137}Cs	1.80 ± 0.02(-3)	9.5 ± 0.1 (-5)	1.90 ± 0.02(-3)	1.98 ± 0.03(-3)
^{51}Cr	<2(-5)	1.6 ± 0.3 (-6)	a	<2(-5)
^{54}Mn	1.53 ± 0.02(-4)	7.66 ± 0.08(-6)	1.61 ± 0.02(-4)[b]	3.5 ± 0.1 (-4)
^{59}Fe	<9(-7)	4.1 ± 0.4 (-7)	a	<2(-6)
^{58}Co	8.8 ± 0.2 (-5)	4.3 ± 0.1 (-6)	9.2 ± 0.2 (-5)[b]	2.10 ± 0.03(-4)
^{60}Co	5.0 ± 0.1 (-4)	2.32 ± 0.04(-5)	5.2 ± 0.1 (-4)[b]	1.22 ± 0.01(-3)
^{65}Zn	2.7 ± 0.1 (-5)	2.0 ± 0.1 (-6)	2.9 ± 0.1 (-5)[b]	7.0 ± 0.5 (-5)
^{99}Tc	*	<2(-7)	a	b
^{239}Np	2.2 ± 0.3 (-5)	<2(-7)	2.2 ± 0.3 (-5)	1.9 ± 0.3 (-5)

Table B.5-7 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "B" FILTERED SAMPLES
(microcuries/gram)

	Date: 5/17/82 Time: 1140			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	6.70 ± 0.03(-4)	7.4 ± 0.4 (-7)	6.71 ± 0.03(-4)	6.51 ± 0.03(-4)
^{134}Cs	1.58 ± 0.02(-4)	8.5 ± 0.2 (-6)	1.66 ± 0.02(-4)	1.68 ± 0.01(-4)
^{136}Cs	1.47 ± 0.04(-5)	5.8 ± 0.2 (-7)	1.48 ± 0.04(-5)	1.46 ± 0.03(-5)
^{137}Cs	1.81 ± 0.02(-4)	1.16 ± 0.02(-5)	1.93 ± 0.02(-4)	1.93 ± 0.04(-4)
^{51}Cr	<2(-5)	4 ± 1 (-7)	a	<6(-6)
^{54}Mn	6.3 ± 0.4 (-6)	5.80 ± 0.03(-7)	6.9 ± 0.4 (-6)[b]	1.43 ± 0.04(-5)
^{59}Fe	<4(-7)	2.6 ± 0.3 (-7)	a	<7(-7)
^{58}Co	5.3 ± 0.3 (-6)	3.3 ± 0.2 (-7)	5.6 ± 0.3 (-6)[b]	1.19 ± 0.04(-5)
^{60}Co	4.6 ± 0.1 (-5)	2.60 ± 0.05(-6)	4.9 ± 0.1 (-5)[b]	1.16 ± 0.02(-4)
^{65}Zn	2.0 ± 0.3 (-6)	1.2 ± 0.4 (-7)	2.1 ± 0.3 (-6)[b]	5.4 ± 0.6 (-6)
^{99}Tc	<1(-5)	<6(-8)	a	2.1 ± 0.3 (-6)
^{239}Np	<2(-6)	<8(-8)	a	<2(-6)

Table B.5-7 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "B" FILTERED SAMPLES
(microcuries/gram)

	Date: 5/24/82 Time: 1215			
Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	7.77 ± 0.04(-4)	2.7 ± 0.1 (-7)	7.79 ± 0.04(-5)	7.71 ± 0.05(-5)
^{134}Cs	5.62 ± 0.04(-5)	5.2 ± 0.2 (-7)	5.67 ± 0.04(-5)	5.71 ± 0.06(-5)
^{136}Cs	3.1 ± 0.2(-6)	<6(-8)	a	3.1 ± 0.2 (-6)
^{137}Cs	6.47 ± 0.05(-5)	7.5 ± 0.3 (-7)	6.54 ± 0.05(-5)	6.6 ± 0.2 (-5)
^{51}Cr	<5(-6)	1.3 ± 0.1 (-6)	a	<4(-6)
^{54}Mn	3.5 ± 0.3 (-6)	9.9 ± 0.4 (-7)	4.5 ± 0.3 (-6)[b]	7.9 ± 0.4 (-6)
^{59}Fe	<3(-7)	6.5 ± 0.5 (-7)	a	7 ± 2 (-7)
^{58}Co	3.2 ± 0.2 (-6)	2.7 ± 0.3 (-7)	3.5 ± 0.2 (-6)[b]	6.8 ± 0.3 (-6)
^{60}Co	3.43 ± 0.07(-5)	1.70 ± 0.04(-6)	3.60 ± 0.08(-5)[b]	7.4 ± 0.2 (-5)
^{65}Zn	7 ± 3 (-7)	<2(-7)	a	1.9 ± 0.4 (-6)
^{99}Tc	<1(-6)	<8(-8)	a	<3(-7)
^{239}Np	<3(-6)	<9(-8)	a	<1(-6)

Table B.5-7 (cont'd)
UNIT NO. 2 SPENT FUEL POOL FILTER/DEMINERALIZER OUTLET "B" FILTERED SAMPLES
(microcuries/gram)

Date: 6/5/82
Time: 1033

Nuclide	Filtrate (Soluble)	Filter	Sum	Grab (Total Sample)
^{131}I	3.3 ± 0.5 (-6)	6.4 ± 0.5 (-8)	3.4 ± 0.5 (-6)	3.3 ± 0.1 (-6)
^{134}Cs	8.8 ± 0.2 (-5)	2.21 ± 0.07(-7)	8.8 ± 0.2 (-5)	8.76 ± 0.06(-5)
^{136}Cs	2.5 ± 0.3(-6)	<2(-8)	2.5 ± 0.3 (-6)	2.88 ± 0.09(-6)
^{137}Cs	9.5 ± 0.1 (-5)	2.8 ± 0.1 (-7)	9.5 ± 0.1 (-5)	9.2 ± 0.2 (-5)
^{51}Cr	<4(-6)	8 ± 4 (-8)	a	<2(-6)
^{54}Mn	3.6 ± 0.3 (-6)	1.30 ± 0.08(-7)	3.7 ± 0.3 (-6)[b]	4.8 ± 0.1 (-6)
^{59}Fe	<7(-7)	4.0 ± 0.8 (-8)	a	<5(-7)
^{58}Co	3.3 ± 0.2 (-6)	3.8 ± 0.6 (-8)	3.3 ± 0.2 (-6)[b]	4.8 ± 0.2 (-6)
^{60}Co	3.79 ± 0.07(-5)	6.4 ± 0.2 (-7)	3.80 ± 0.07(-5)[b]	5.17 ± 0.07(-5)
^{65}Zn	<2(-6)	<4(-8)	a	2.2 ± 0.2 (-6)
^{99}Tc	<2(-4)	<7(-7)	a	<5(-6)
^{239}Np	<2(-6)	<7(-8)	a	<8(-7)

* Radionuclide not measured.

a. Not determined because of significant less-than values for filtrate and/or filter samples.

b. Sum and grab values disagree by more than the greater of 2 (sum + grab) or 10 percent.

TABLE B.5-8
DECONTAMINATION FACTORS FOR SPENT FUEL POOL FILTER DEMINERALIZERS
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	U-1 Hdr 3-26-82 1013-1014	U-2 "B" 3-27-82 1007	U-2 "B" 3-27-82 1110	U-2 "B" 3-31-82 1109	U-2 Hdr 4-6-82 0940	U-2 "B" 4-13-82 0958
^{131}I	a	a	a	a	a	a
^{132}I	a	a	a	a	a	a
^{134}Cs	2.4 ± 0.2	2.5 ± 0.2	2.3 ± 0.2	1.36 ± 0.04	4.3 ± 0.3	2.1 ± 0.1
^{136}Cs	a	a	a	a	a	a
^{137}Cs	2.44 ± 0.06	2.5 ± 0.1	2.4 ± 0.1	1.40 ± 0.03	4.2 ± 0.2	2.08 ± 0.08
^{51}Cr	a	a	a	a	a	a
^{54}Mn	1.8 ± 0.5	8 ± 4 (-2)	<4(-1)	<4(-1)	<2	a
^{59}Fe	a	a	a	a	<2	a
^{58}Co	a	a	a	a	a	<3
^{60}Co	2.7 ± 0.1	2.88 ± 0.09	3.81 ± 0.08	2.4 ± 0.4	1.11 ± 0.04(1)	2.0 ± 0.1 (1)
^{65}Zn	a	<2	<4	a	a	a
^{95}Zr	a	a	a	a	a	a
^{95}Nb	a	a	a	a	a	a
^{99}Tc	a	a	a	a	a	a
^{103}Ru	a	a	a	a	>2	a
^{124}Sb	a	a	a	a	a	a
^{132}Te	a	a	a	a	a	a
^{140}Ba	>1(-1)	a	a	a	a	>2
^{141}Ce	a	a	a	a	a	a
^{239}Np	a	a	a	a	a	a

TABLE B.5-8 (cont'd)
DECONTAMINATION FACTORS FOR SPENT FUEL POOL FILTER DEMINERALIZERS
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	U-2 "A" 4-28-82 1710	U-2 "A" 5-3-82 0934	U-2 "B" 5-3-82 1938	U-2 "A" 5-7-82 1042	U-2 "B" 5-7-82 1044	U-2 "A" 5-10-82 1150-1154
^{131}I	4 ± 2	3.57 ± 0.06	3.90 ± 0.06	8.2 ± 0.1	7.9 ± 0.2	7.9 ± 0.4
^{132}I	a	*	*	*	*	*
^{134}Cs	7.6 ± 0.3	9.1 ± 0.1 (-1)	1.00 ± 0.02	1.69 + 0.02	1.82 ± 0.02	9.0 ± 0.2 (-1)
^{136}Cs	a	9.3 ± 0.2 (-1)	1.06 ± 0.02	1.77 ± 0.07	1.81 ± 0.03	9.1 ± 0.3 (-1)
^{137}Cs	7.8 ± 0.3	9.3 ± 0.2 (-1)	1.01 ± 0.02	1.89 ± 0.03	1.92 ± 0.03	9.1 ± 0.2 (-1)
^{51}Cr	a	>1(0)	3 ± 2	>2	>2	>9(-1)
^{54}Mn	1.0 ± 0.3(1)	1.46 ± 0.03	1.14 ± 0.02	3.27 ± 0.04	2.69 ± 0.05	1.09 ± 0.03
^{59}Fe	a	>7	>7	>5	>2	>2
^{58}Co	3 ± 2	1.36 ± 0.03	1.11 ± 0.03	3.11 ± 0.05	2.61 ± 0.06	1.07 ± 0.02
^{60}Co	8.5 ± 0.2	1.27 ± 0.02	1.13 ± 0.03	3.10 ± 0.05	2.61 ± 0.05	1.12 ± 0.03
^{65}Zn	2 ± 1	1.45 ± 0.06	1.14 ± 0.05	3.25 ± 0.07	2.5 ± 0.1	1.06 ± 0.03
^{95}Zr	a	a	a	<2	<2	a
^{95}Nb	a	a	a	a	a	a
^{99}Tc	a	3 ± 1 (1)	a	>3	*	>3(-1)
^{103}Ru	a	a	a	a	a	a
^{124}Sb	a	a	a	a	a	a
^{132}Te	a	>9(-1)	0.9 ± 0.4	2.2 ± 0.9	>9(-1)	>1
^{140}Ba	a	2.5 ± 0.7	2.3 ± 0.4	6 ± 3	>3	1.9 ± 0.6
^{141}Ce	a	a	a	a	a	a
^{239}Np	a	8.9 ± 0.4 (-1)	1.14 ± 0.09	1.4 ± 0.1	1.7 ± 0.5	1.0 ± 0.2

TABLE B.5-8 (cont'd)
DECONTAMINATION FACTORS FOR SPENT FUEL POOL FILTER DEMINERALIZERS
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	U-2 "B" 5-10-82 1150-1158	U-2 "A" 5-12-82 0949-0945	U-2 "B" 5-12-82 0949-0941	U-2 "A" 5-17-82 [b] 1200-1150	U-2 "B" 5-17-82 1200-1140	U-2 "A" 5-24-82 1155-1206
^{131}I	4.0 ± 0.3	7.2 ± 0.1	4.04 ± 0.05	1.55 ± 0.02(1)	1.23 ± 0.01	1.06 ± 0.02
^{132}I	*	4.3 ± 0.1	*	>1(2) (2)	1.76 ± 0.06	3.15 ± 0.07
^{134}Cs	9.3 ± 0.1 (-1)	7.1 ± 0.1	3.60 ± 0.04	8.4 ± 0.2 (1)	2.86 ± 0.03	3.9 ± 0.1
^{136}Cs	8.9 ± 0.4 (-1)	6.8 ± 0.1	3.0 ± 0.2	8 ± 1 (1)	2.95 ± 0.09	4.1 ± 0.5
^{137}Cs	9.2 ± 0.2 (-1)	6.9 ± 0.2	2.84 ± 0.07	8.2 ± 0.3 (1)	2.83 ± 0.08	3.9 ± 0.2
^{51}Cr	>9(-1)	>3(1)	>2(1)	>2(2)	>3(1)	>1(1)
^{54}Mn	1.09 ± 0.03	1.50 ± 0.04(1)	6.36 ± 0.09	1.1 ± 0.3 (3)	1.66 ± 0.06	1.16 ± 0.08(1)
^{59}Fe	>2	>1(2)	1.0 ± 0.6 (2)	>1(2)	>1(2)	2.0 ± 0.2 (1)
^{58}Co	1.08 ± 0.02	1.22 ± 0.04(1)	5.0 ± 0.1	4.2 ± 0.8 (1)	9.4 ± 0.3	1.1 ± 0.1 (1)
^{60}Co	1.12 ± 0.01	1.17 ± 0.04(1)	4.7 ± 0.1	4.9 ± 0.3 (2)	7.2 ± 0.2	7.9 ± 0.2
^{65}Zn	1.15 ± 0.08	1.0 ± 0.1 (1)	4.1 ± 0.3	<2(2)	7 ± 4	5 ± 1
^{95}Zr	a	>4	>2	>1 (1)	>4	>2
^{95}Nb	a	>1(1)	>1(1)	>1(1)	>1(1)	>8
^{99}Tc	>2(-1)	4.9 ± 0.5 (1)	2 ± 1	>1(2)	1.5 ± 0.2 (1)	5 ± 1
^{103}Ru	a	a	a	>4(1)	>4	>8
^{124}Sb	a	5 ± 2	>3	>7	>3	>3
^{132}Te	a	a	a	a	a	a
^{140}Ba	3 ± 1	a	a	a	a	a
^{141}Ce	a	a	a	>8	>4	>1
^{239}Np	1.3 ± 0.2	3 ± 1	1.8 ± 0.5	a	a	a

TABLE B.5-8 (cont'd)
DECONTAMINATION FACTORS FOR SPENT FUEL POOL FILTER DEMINERALIZERS
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time					
	U-2 "B" 5-24-82 1155-1217	U-2 "A" 5-28-82 1050-1052	U-2 "B" 5-28-82 1050-1054	U-2 "A" 6-1-82 1007-1111	U-2 "A" 6-5-82 1024-1028	U-2 "B" 6-5-82 1024-1033
^{131}I	5.0 ± 0.1	1.24 ± 0.01	1.37 ± 0.01	7.9 ± 0.1	5.6 ± 0.4	4.7 ± 0.2
^{132}I	5 ± 1	2.2 ± 0.3	>5	a	*	*
^{134}Cs	5.7 ± 0.2	3.47 ± 0.04	2.96 ± 0.04	7.37 ± 0.09	1.41 ± 0.02	2.30 ± 0.03
^{136}Cs	6.1 ± 0.8	3.6 ± 0.2	3.8 ± 0.2	7.5 ± 0.3	1.25 ± 0.06	2.3 ± 0.1
^{137}Cs	5.6 ± 0.3	3.44 ± 0.04	3.44 ± 0.06	7.9 ± 0.1	1.38 ± 0.02	2.37 ± 0.6
^{51}Cr	>5(1)	>2(1)	1.3 ± 0.3 (1)	>2(1)	>7(-1)	>1
^{54}Mn	2.0 ± 0.1 (1)	2.3 ± 0.1 (1)	4.3 ± 0.3 (1)	1.49 ± 0.06(1)	4.6 ± 0.2	5.9 ± 0.2
^{59}Fe	1.2 ± 0.3 (2)	>1(2)	4.3 ± 0.7 (1)	4.3 ± 0.8 (1)	>5	>4
^{58}Co	1.12 ± 0.05(1)	1.43 ± 0.06(1)	4.6 ± 0.4 (1)	1.07 ± 0.03(1)	3.3 ± 0.2	4.5 ± 0.2
^{60}Co	8.5 ± 0.2	1.3 ± 0.3 (1)	3.9 ± 0.1 (1)	1.12 ± 0.03(1)	4. ± 1.	4.8 ± 0.1
^{65}Zn	1.4 ± 0.3 (1)	1.3 ± 0.2 (1)	3 ± 2 (1)	9.1 ± 0.5	3.1 ± 0.4	4.6 ± 0.5
^{95}Zr	>9	>4	>2	>4	a	a
^{99}Nb	>9	>1(1)	6 ± 1 (-1)	>7	a	a
^{103}Tc	>2.(1)	1.2 ± 0.5 (1)	>6	>2	a	a
^{124}Ru	>2.(1)	>1(1)	1.1 ± 0.8 (1)	>9	a	a
^{132}Sb	>3	2 ± 1	3 ± 2	>2	a	a
^{140}Te	a	a	a	a	a	a
^{141}Ba	a	a	a	a	a	a
^{239}Ce	>3	>4	>3	>4	a	a
^{239}Np	a	a	a	a	a	a

TABLE B.5-8 (cont'd)
DECONTAMINATION FACTORS FOR SPENT FUEL POOL FILTER DEMINERALIZERS
(microcuries/gram)

Nuclide	Filter Demineralizer/Date/Time			
	"A" 6-20-82 1144-1142	"B" 6-20-82 1144-1140	"A" 7-5-82 1130	"B" 7-5-82 1130
^{131}I	1.3 ± 0.3	2.2 ± 0.5	1.4 ± 0.2	1.2 ± 0.2
^{132}I	a	a	a	a
^{134}Cs	>3	2.09 ± 0.03	>4	>3
^{136}Cs	3.9 ± 0.3	2.2 ± 0.2	<2	a
^{137}Cs	3.92 ± 0.08	2.20 ± 0.05	4.77 ± 0.09	3.9 ± 0.1
^{51}Cr	>2	>2	>1	>1
^{54}Mn	1.9 ± 0.3 (1)	8 ± 1	>3(1)	>2(1)
^{59}Fe	>12	>1(1)	a	a
^{58}Co	1.4 ± 0.3 (1)	7 ± 1	>1(1)	>1(1)
^{60}Co	1.81 ± 0.06(1)	6.1 ± 0.2	5.6 ± 0.3 (1)	3.7 ± 0.4 (1)
^{65}Zn	>7	>2	>7	>7
^{95}Zr	a	a	a	a
^{95}Nb	>2	>1	<3	a
^{99}Tc	*	a	a	a
^{103}Ru	a	a	a	a
^{124}Sb	>7(-1)	>3	>5(-1)	>7(-1)
^{132}Te	a	a	>3	a
^{140}Ba	a	a	a	a
^{141}Ce	a	a	a	a
^{239}NP	a	a	a	a

* Radionuclide not measured.
a. Concentrations in both inlet and outlet samples were below detection limits.
b. Not used in averages (Filter/Demineralizer not in operation).

TABLE B.5-9
PRECOATS OF SFP FILTER/DEMINERALIZERS

F/D 2-A		F/D 2-B	
		(2251)	4-27-82
(0219)	4-28-82		
(1720)	5- 6-82	(2036)	5- 6-82
		(2040)	5-11-82
(0000)	5-12-82		
(1805)	5-13-82	(1740)	5-13-82
(1240)	5-15-83		
(1743)	5-17-82	(1942)	5-17-82
(1605)	5-23-82		
		(0944)	5-24-82
(1555)	5-26-82	(1641)	5-26-82
(2130)	5-27-82	(2312)	5-27-82
		(1415)	5-29-82
(0304)	5-30-82	(2256)	5-30-82
(1149)	5-31-82		
(1231)	5-31-82		
(1028)	6- 1-82		
(0132)	6- 3-82	(0048)	6- 3-82
		(1206)	6- 4-82
(1115)	6- 6-82		
		(1915)	6-15-82
(1159)	6-16-82	(1318)	6-16-82
(1516)	6-16-82	(2325)	6-16-82
(2130)	6-16-82		
(0229)	6-17-82	(0419)	6-17-82
(0344)	6-19-82		

Table B.6-1a
UNIT NO. 1 STEAM JET AIR EJECTOR SUM OF SIX NOBLE GAS RELEASE RATES [b]
(Plant Data)

Date	Percent Power	µCi/s	Date	Percent Power	µCi/s
7-22-77	96.0	232.40	7-7-78	99.5	215.3
7-26	86.0	116.30	7-25	100.0	211.4
8-12	62.0	121.97	8-1	98.8	104.8
8-23	100.0	234.00	8-22	77.6	47.8
8-26	100.0	170.50	8-29	99.8	397.1
9-2	98.0	120.00	9-6	100.0	512.6
9-9	96.0	144.80	9-12	99.7	744.8
9-20	92.0	156.60	9-19	82.1	390.9
10-18	91.0	398.30	10-10	99.2	239.3
10-28	100.0	234.30	10-17	99.6	723.4
11-8	100.0	240.80	10-31	99.8	545.7
1-6-78	75.8	588.10	11-7	99.3	617.0
1-19	98.5	450.20	11-21	52.0	173.9
1-27	96.6	590.50	11-30	77.7	266.1
1-31	100.0	338.40	12-5	86.7	146.9
2-7	93.8	361.80	12-15	95.2	956.6
3-7	99.9	58.80			
3-21	100.0	185.00			
3-29	99.9	203.00			
4-11	98.0	253.00			
4-19	100.0	7738.80			
4-26	99.9	4254.60			
5-5	95.9	4172.20			
5-12	97.1	3106.90			
6-1	99.4	229.10			
6-13	99.7	348.80			
6-21	100.0	243.30			

b. Sum of six noble gas nuclides: ^{138}Xe, ^{87}Kr, ^{88}Kr, ^{85m}Kr, ^{135}Xe, and ^{133}Xe.

Table 8.6-1b
UNIT NO. 1 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
1-79 to 3-79--Outage								
4-27-79	94.40	136.0	11.10	4.76	2.180	3.91	**	160
5-11	98.20	271.0	27.00	14.63	1.460	10.90	**	325
5-15	98.10	117.0	13.10	13.37	1.170	4.59	**	150
5-18	98.30	120.0	16.60	5.00	1.500	3.80	**	150
6-20	99.95	112.0	12.40	8.74	1.250	5.04	0.810	140
6-29	93.70	167.0	13.90	7.07	1.600	4.84	6.710	200
7-3	98.80	157.0	14.70	6.67	6.160	6.59	0.690	190
7-13	90.00	121.0	7.89	2.76	1.420	4.62	0.670	140
7-24	98.60	195.0	11.80	3.92	2.190	4.53	**	220
8-3	94.90	143.0	12.00	13.00	1.900	5.57	0.750	170
8-7	96.60	142.0	9.76	9.14	0.661	4.54	0.306	170
9-7	90.60	158.0	13.10	8.59	0.114	5.09	0.027	180
9-25	90.60	177.0	14.40	6.86	2.110	5.28	0.020	200
10-5	97.20	183.0	15.30	9.63	2.150	4.89		210
10-12	97.30	144.0	9.27	7.42	1.580	5.08	0.338	168
10-30	98.50	177.0	13.50	5.31	1.660	6.44	0.308	203
11- -79	**	**	**	**	**	**	**	**
12-11-79	99.50	167.0	16.00	5.23	2.900	7.54	1.010	200
1-8-80	77.50	145.0	11.20	5.61	1.540	4.46	0.360	160
1-18	96.00	678.0	196.00	131.00	97.500	513.00	388.000	2004
1-25	99.90	506.0	200.00	111.00	83.900	377.00	183.000	1460
1-30	99.80	453.0	190.00	118.00	81.200	335.00	156.000	1300
2-5	99.50	92.9	44.30	37.80	17.900	80.70	42.100	330

Table B.6-1b (cont'd)
UNIT NO. 1 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
2-15	98.50	187.0	72.40	72.60	55.80	142.00	141.000	700
2-19	98.10	157.0	55.80	55.50	42.60	10.90	129.000	452
3-3	99.40	198.0	66.80	67.70	49.10	124.00	114.000	600
3-4	65.70	86.0	13.20	15.80	13.30	32.30	40.300	200
3-14	99.30	165.0	10.90	4.32	2.36	6.67	8.600	200
3-18	98.90	181.0	14.50	4.27	3.03	6.59	38.300	250
4-23	59.80	122.0	11.00	4.96	1.75	4.87	0.477	140
4-25	91.90	145.0	13.80	3.75	1.41	6.12	0.402	180
4-29	82.50	123.0	15.10	5.26	2.09	5.95	13.320	160
5-10	71.60	171.0	19.90	9.59	5.73	13.70	110.000	336
5-23	45.00	89.7	6.32	2.14	1.30	3.54	3.900	110
6-79 to 7-79—Outage								
8-29	47.80	106.3	10.40	3.37	1.38	4.13	0.115	120
9-5-80	95.90	53.2	7.22	3.07	1.55	5.38	0.408	70
9-12	62.30	62.3	7.83	3.10	1.61	5.49	0.483	80
9-26	99.30	180.0	15.20	4.83	2.12	5.70	0.527	200
9-29	91.96	160.0	14.10	4.68	3.03	5.60	0.490	190
10-7	100.00	176.0	15.80	4.85	2.12	6.99	0.330	200
10-17	88.00	78.2	9.37	3.08	1.36	4.99	0.246	97
10-21	88.00	58.9	8.50	2.79	1.54	4.35	0.289	76
10-31	99.00	90.4	9.61	3.97	1.80	6.45	0.625	110
11-19	99.30	166.0	14.60	5.49	4.25	6.51	0.648	200
11-25	99.10	142.0	14.70	7.09	1.83	6.61	6.300	180
12-5	99.80	196.5	17.50	8.04	1.85	6.39	0.296	230

Table 8.6-1b (cont'd)
UNIT NO. 1 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
3-6-81	46.00	72.60	4.33	3.22	0.971	3.12	0.343	80
3-24	91.00	178.00	14.90	6.50	2.600	7.50	0.540	200
4-14	75.00	155.00	10.50	5.22	1.670	6.44	0.420	180
4-17	74.00	135.00	8.96	5.56	1.590	6.13	0.272	150
8-81--Outage								
9-29	74.40	174.00	11.30	6.41	3.210	6.55	0.255	190
10-13	99.00	138.00	11.60	7.42	2.040	7.94	0.387	160
10-23	87.50	220.00	16.20	6.87	3.450	6.88	0.574	250
11-13	99.40	183.00	9.22	7.34	2.020	7.74	0.489	200
12-11-81	100.00	219.00	13.20	7.99	3.170	8.48	0.305	250
12-18	99.80	192.00	11.60	6.56	3.350	7.04	0.464	220
1-19-82	99.80	174.80	13.16	8.36	3.670	7.03	0.446	200
1-26	99.50	194.14	16.26	6.60	2.930	6.59	0.552	220
2-16	89.99	195.99	12.50	9.03	3.660	6.36	0.374	230
2-26	85.40	216.00	14.41	9.11	3.040	7.73	0.252	250
3-12	65.30	182.40	13.56	4.92	2.060	7.28	0.368	200
3-19	63.80	355.80	13.03	6.33	1.831	6.48	0.358	380
4-27	60.00	113.30	8.09	4.99	1.570	4.91	0.294	130
4-30	60.20	66.30	11.09	7.78	1.220	2.61	0.345	90
5-14	59.90	100.00	6.25	4.36	1.300	4.53	0.241	110
5-21	60.60	108.40	7.46	4.13	1.480	2.57	0.262	120

** Not reported by plant.

b. Sum of six noble gas nuclides: ^{138}Xe, ^{87}Kr, ^{88}Kr, ^{85m}Kr, ^{135}Xe, and ^{133}Xe.

Table B.6-2a
UNIT NO. 2 STEAM JET AIR EJECTOR SUM OF SIX NOBLE GAS RELEASE RATES [b]
(Plant Data)

Date	Percent Power	μCi/s	Date	Percent Power	μCi/s
8-16-76	60	7.4(E3)	1-20-78	55.5	383.29
8-20	85	24.0(E3)	2-13	95.5	1392.00
9-11	93	25.0(E3)	2-24	95.5	3259.00
9-17	48	13.4(E3)	3-3	95.4	3623.00
9-24	78	26.0(E3)	3-10	94.3	4415.00
1-7-77	85	22882.0	3-23	96.3	2792.00
1-14	90	24590.0	4-6	58.0	228.00
1-18	90	31247.0	4-13	74.2	685.10
2-1	89	33787.0	4-21	99.8	576.40
2-11	64	30160.0	5-5	96.1	619.90
2-18	37	14710.0	5-12	99.5	522.80
2-25	37	4991.0	5-26	96.5	158.40
			6-1	90.2	92.80
3-4	48	6577.0	6-23	62.2	324.40
3-24	70	20096.0	7-7	56.3	3766.90
3-26	58	20048.0	7-14	100.0	1160.70
4-1	68	20391.0	7-28	100.0	1232.00
4-14	71	26449.0	8-4	99.1	726.60
5-13	76	24801.0	8-18	99.8	1442.90
5-20	83	18374.0	8-31	99.1	17904.60
5-27	76	16714.0	9-1	99.7	12866.00
6-10	87	29058.0	9-26	91.7	15642.00
6-21	82	28745.0	10-3	100.0	9098.00
7-1	83	35596.0	10-20	99.8	6003.00
7-8	74	16375.0	11-3	99.3	3515.00
7-27	71	13912.0	11-24	84.7	4878.00

Table B.6-2a (cont'd)
UNIT NO. 2 STEAM JET AIR EJECTOR SUM OF SIX NOBLE GAS RELEASE RATES [b]
(Plant Data)

Date	Percent Power	μCi/s	Date	Percent Power	μCi/s
8-15	71	28477.0	12-8	96.8	4928.00
8-12	75	13912.0	12-15	98.7	5650.00
8-26	65	8200.0	12-21	96.0	2656.00
9-7	72	26850.0			
10-11	Outage				

b. Sum of six noble gas nuclides: ^{138}Xe, ^{87}Kr, ^{88}Kr, ^{85m}Kr, ^{135}Xe, and ^{133}Xe.

Table B.6-2b
UNIT NO. 2 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
1-5-79	92.6	1702.00	1031.00	736.00	514.00	1961.00	746.000	6700
2-28	78.5	2103.00	1726.00	1113.00	716.00	2841.00	1266.000	9700
3-79 to 4-79--Outage								
5-25	61.5	119.00	135.00	4.91	2.03	7.72	0.672	270
6-20	51.9	229.00	13.70	7.34	2.75	10.50	0.655	260
6-28	56.1	1230.00	134.00	102.00	60.80	760.00	220.000	2500
6-29	76.4	4700.00	761.00	436.00	293.00	1560.00	606.000	8400
7-1	91.0	5750.00	1880.00	1030.00	808.00	6420.00	2940.000	19000
7-6	56.8	2190.00	238.00	160.00	64.30	244.00	111.000	3000
7-10	91.0	5970.00	1680.00	875.00	646.00	3290.00	1540.000	14000
7-12	90.0	5640.00	1530.00	838.00	581.00	5080.00	2410.000	16000
7-24	96.2	6790.00	1980.00	1310.00	1030.00	5100.00	1390.000	18000
7-27	95.6	5090.00	1310.00	847.00	462.00	2550.00	1300.000	12000
8-7	35.0	1.40(3)	3.52(2)	200.00	120.00	953.00	417.000	2200
8-10	80.0	6.69(3)	1.46(3)	955.00	430.00	1400.00	624.000	12000
8-17	92.9	5.08(3)	1.20(3)	841.00	465.00	2010.00	1360.000	11000
8-20	95.9	1.68(3)	853.00	725.00	402.00	1420.00	1310.000	6400
8-28	94.5	7.34(2)	236.00	230.00	154.00	1200.00	1340.000	3900
8-31	93.7	4.81(2)	158.00	154.00	101.00	621.00	877.000	2400
10-5	88.7	6169.00	2070.00	1830.00	938.00	3940.00	3120.000	18000
10-12	93.1	6661.00	2440.00	1920.00	961.00	4831.00	2203.000	19000
10-18	96.2	9226.00	3080.00	2520.00	1263.00	5625.00	3120.000	25000
10-26	60.8	5302.00	1640.00	1310.00	762.00	3990.00	3010.000	16000
11-2	91.4	6340.00	2070.00	1727.00	873.00	3522.00	2136.000	17000

Table B.6-2b (cont'd)
UNIT NO. 2 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
11-9-79	91.00	5910.00	1999.00	1727.00	844.00	3255.00	2083.00	16000
11-26	95.00	8606.00	3306.00	2479.00	1320.00	5188.00	2701.00	24000
11-28	99.00	9427.00	3219.00	2585.00	1454.00	6494.00	3391.00	27000
12-79	**	**	**	**	**	**	**	—
1-5-80	96.20	1024.40	266.90	249.60	111.60	516.10	462.10	2600
1-18	97.30	10083.00	3241.00	2063.00	1251.00	5383.00	3266.00	25000
1-25	95.50	8946.00	2807.00	2255.00	1227.00	5303.00	3280.00	24000
2-1	96.20	9436.00	2670.00	2011.00	1106.00	4673.00	2727.00	23000
2-8	95.80	10551.00	2790.00	1912.00	1176.00	4412.00	2973.00	24000
2-22	92.40	5321.00	1230.00	1020.00	593.00	2224.00	1233.00	12000
2-26	94.90	8923.00	2091.00	1839.00	1223.00	3858.00	2214.00	20000
2-29	83.00	9882.00	2219.00	1658.00	856.00	3326.00	2013.00	20000
3-80 to 8-80--Outage								
9-29	51.80	1607.00	127.00	53.20	24.00	63.60	6.23	1900
10-3	75.90	2761.00	156.00	80.00	29.70	105.00	20.10	3200
10-8	84.40	2960.00	174.00	68.10	29.80	94.90	11.30	3400
10-17	80.79	1702.00	104.00	37.70	16.96	58.50	6.93	1900
10-24	100.00	3713.00	407.00	139.00	133.00	393.00	285.10	5100
10-30	82.40	4069.00	508.00	347.00	152.00	908.00	1298.00	7300
11-3	94.60	7.94(3)		2.21(3)	1.23(3)	7.19(2)		3.12(3)
	3.68(3)	16000						
11-7	100.00	7786.00	1552.00	1413.00	812.00	5995.00	3391.00	22000
11-21	82.60	6910.00	1329.00	1150.00	560.00	1955.00	1233.00	13000
11-28	96.50	9435.00	1943.00	1715.00	806.00	4423.00	18322.00	36000
12-5	99.40	9262.50	3086.00	2597.00	1326.00	6273.00	3981.00	27000

Table B.6-2b (cont'd)
UNIT NO. 2 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
1-6-81	82.0	3.65(3)	837	946	541	1520	1053	8500
1-13	88.7	5.29(3)	1094	1266	478	2034	974	11000
1-27	78.5	5.42(3)	948	815	367	1162	912	9600
1-30	72.0	4.01(3)	480	508	182	773	516	6500
2-3	72.7	3870.00	464	547	324	767	560	6700
2-6	72.1	3991.00	527	583	279	797	587	6600
2-10	70.9	3921.00	512	467	220	729	608	6400
2-13	80.4	5384.00	975	746	369	966	963	9500
2-24	56.2	3780.00	584	401	227	708	340	6000
4-21	58.2	4110.00	790	725	214	746	211	6800
5-1	97.7	9662.00	1226	1233	489	2134	1312	16000
5-5	66.4	7887.00	1080	1300	465	1501	2108	14000
6-15	86.0	8588.00	2042	1989	747	4488	988	19000
6-18	96.0	11750.00	2416	2070	1022	5040	1793	24000
6-19	96.0	12220.00	2559	2242	1041	4911	2254	25000
6-30	86.0	11636.00	2320	1988	744	2590	827	20000
7-6	86.2	1090.00	2408	1560	722	2338	802	8800
7-15	86.5	11191.00	1857	1326	668	2183	731	17000
7-28	43.0	8806.00	945	911	269	1075	655	13000
8-1	90.6	17619.00	3251	2448	1011	4916	1188	31000
8-4	93.2	18682.00	4034	2516	1249	4462	1591	32000
8-25	96.2	12549.00	2714	2424	898	3628	1710	24000
9-3	92.9	12566.00	2551	2325	862	3131	1507	23000
9-17	89.9	12164.00	2317	1960	693	2524	1101	20000

Table B.6-2b (cont'd)
UNIT NO. 2 STEAM JET AIR EJECTOR NOBLE GAS RELEASE RATES
(Plant Data)

Date	Percent Power	^{138}Xe µCi/s	^{87}Kr µCi/s	^{88}Kr µCi/s	^{85m}Kr µCi/s	^{135}Xe µCi/s	^{133}Xe µCi/s	µCi/s[b]
9-25-81	83.6	14390.00	2067.000	1993.00	719.00	2577.00	850.00	22000
10-6	72.9	1.42(4)	2.140(3)	1.97(3)	6.62(2)	2.75(3)	7.77(2)	22000
10-16	73.2	1.61(4)	3.170(3)	2.42(3)	9.40(2)	3.65(3)	1.38(3)	27000
10-20	58.4	1.42(4)	1.850(3)	1.69(3)	6.16(2)	2.26(3)	7.94(2)	21000
11-4	68.2	2.26(4)	1.960(3)	1.85(3)	6.10(2)	1.85(3)	5.27(2)	28000
11-13	86.6	2.36(4)	2.160(3)	2.31(3)	8.25(2)	3.56(3)	1.49(3)	34000
11-24	77.0	2.46(4)	2.590(3)	2.47(3)	8.66(2)	3.64(3)	1.18(3)	38000
12-1	76.7	2.68(4)	2735.000	2602.00	834.00	3643.00	1053.00	38000
12-8	76.9	2.86(4)	2657.000	2418.00	812.00	3339.00	1019.00	39000
1-6-82	88.0	29053.00	3427.600	3486.20	1307.20	4636.10	1889.60	43000
1-13	70.5	23518.00	2780.000	2498.00	1028.00	3810.00	1311.00	35000
1-19	69.2	17320.00	2722.000	2268.00	826.00	3246.00	780.00	27000
2-3	73.8	23680.00	2356.000	2169.00	728.00	2850.00	879.00	33000
3-10	83.7	3.99(4)	3.167(3)	2.93(3)	1.06(3)	4.27(3)	1.47(3)	53000
3-16	81.7	4.15(4)	4.620(3)	3.64(3)	1.21(3)	5.09(3)	1.29(3)	57000
4-7	82.2	3.28(4)	3.630(3)	3.83(3)	1.14(3)	4.80(3)	1.38(3)	47000
4-13	80.0	3.45(4)	3.620(3)	3.21(3)	9.77(2)	4.78(3)	1.42(3)	48000
4-23	76.6	3.36(4)	3.140(3)	3.05(3)	1.01(3)	4.07(3)	1.11(3)	46000

5-82—Outage

** Not reported by plant.

b. Sum of six noble gas nuclides: ^{138}Xe, ^{87}Kr, ^{88}Kr, ^{85m}Kr, ^{135}Xe, and ^{133}Xe.

Table B.6-3a
UNIT NO. 1 TURBINE BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/14--3/21/82	3/21--4/1/82	4/1--4/15/82	4/15--4/22/82	4/22--4/23/82	5/9--5/20/82
^{131}I	4.0 ± 0.2 (-5)	1.3 ± 0.2 (-5)	7.3 ± 0.5 (-6)	7 ± 2 (-6)	<4(-5)	2.12 ± 0.06(-5)
^{133}I	1.1 ± 0.6 (-4)		5 ± 2 (-5)	3 ± 1 (-5)	<3(-3)	<9(-5)
^{134}Cs	<6(-7)	<5(-7)	<4(-7)	<3(-7)	<4(-6)	<3(-7)
^{137}Cs	<6(-7)	<5(-7)	1.3 ± 0.3 (-6)	<6(-7)	<5(-6)	<6(-7)
^{51}Cr	<5(-6)	<3(-6)	<3(-6)	<5(-6)	<3(-5)	<5(-6)
^{54}Mn	<2(-6)	<4(-7)	<3(-7)	<6(-7)	<6(-6)	<6(-7)
^{59}Fe	<2(-6)	<6(-7)	<5(-7)	<2(-6)	<6(-6)	<6(-7)
^{60}Co	<2(-6)	1.1 ± 0.2 (-6)	<6(-7)	<6(-7)	<2(-5)	<6(-7)
^{91}Sr	*	<6(-5)	<5(-4)	<2(-3)	*	<5(-4)
^{140}Ba	<4(-6)	<2(-6)	<3(-6)	<6(-6)	<2(-5)	<3(-6)
^{141}Ce	*	<6(-7)	<6(-6)	<6(-7)	<5(-6)	<5(-7)

Table B.6-3a (cont'd)
UNIT NO. 1 TURBINE BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	5/20--6/3/82	6/3--6/17/82	6/17--7/2/82	7/2--7/15/82	7/22--8/11/82	9/29--10/14/82
^{131}I	7.1 ± 0.5 (-6)	8 ± 3 (-7)	<6(-7)	<6(-8)	<2(-7)	4.0 ± 0.2 (-6)
^{133}I	<3(-5)	<4(-6)	<6(-6)	<6(-6)	<4(-6)	<2(-5)
^{135}I	*	<2(-4)	*	*	*	*
^{134}Cs	<2(-7)	<4(-7)	<3(-7)	<4(-7)	<1(-7)	<5(-7)
^{137}Cs	<3(-7)	<6(-7)	<2(-7)	<5(-7)	<2(-7)	<3(-7)
^{51}Cr	<2(-6)	<6(-6)	<2(-6)	<3(-6)	<1(-6)	<2(-6)
^{54}Mn	<2(-7)	<2(-6)	<6(-7)	<5(-6)	<1(-7)	<4(-7)
^{59}Fe	<2(-7)	<6(-7)	<6(-7)	<5(-7)	<2(-7)	<1(-6)
^{60}Co	5- ± 2 (-7)	<2(-6)	<6(-7)	<1(-6)	5 ± 1 (-7)	<1(-6)
^{91}Sr	<2(-5)	<6(-5)	<3(-4)	<2(-4)	<3(-5)	<2(-4)
^{140}Ba	<2(-6)	<6(-6)	<2(-6)	<2(-6)	<5(-7)	<2(-6)
^{141}Ce	<2(-7)	<6(-7)	<3(-7)	<1(-6)	<2(-7)	<1(-6)

Table B.6-3a (cont'd)
UNIT NO. 1 TURBINE BUILDING EXHAUST RELEASE RATES
(microcuries/second)

	Date and Time			
Nuclide	10/14--10/21/82	10/21--10/27/82	10/27--11/9/82	11/9--11/17/82
^{131}I	1.4 ± 0.2 (-6)	5 ± 1 (-6)	2.4 ± 0.2 (-6)	<1(-6)
^{133}I	1.3 ± 0.2 (-5)	2.2 ± 0.8 (-5)	<1(-6)	<4(-6)
^{135}I	4.8 ± 0.2 (-5)	*	*	*
^{134}Cs	<3(-7)	<3(-7)	<2(-7)	<4(-7)
^{137}Cs	<3(-7)	<6(-7)	<3(-7)	<4(-7)
^{51}Cr	<2(-6)	<3(-6)	<6(-6)	<4(-6)
^{54}Mn	<3(-7)	<3(-7)	<6(-7)	<8(-7)
^{59}Fe	<3(-7)	<6(-7)	<8(-7)	<4(-7)
^{60}Co	<6(-7)	<3(-6)	<1(-6)	<2(-7)
^{91}Sr	<1(-5)	<8(-5)	<1(-3)	<2(-5)
^{140}Ba	<2(-6)	<1(-6)	<2(-6)	<2(-6)
^{141}Ce	<3(-7)	<3(-7)	<8(-7)	<4(-7)

* Radionuclide not measured.

Table B.6-3b
UNIT NO. 1 TURBINE BUILDING RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

	Dates					
Nuclide	11/16--11/22/82	11/23--11/29/82	11/30--12/6/82	12/7--12/13/82	12/14--12/20/82	12/21--12/27/82
^{131}I	4.9 ± 0.6 (-7)	3.1 ± 0.8 (-7)	5 ± 2 (-7)	5.0 ± 0.3 (-6)	9.6 ± 0.3 (-6)	4.9 ± 0.2 (-6)
^{133}I	1.6 ± 0.3 (-6)	7 ± 2 (-7)	5.0 ± 0.7 (-6)	1.2 ± 0.2 (-5)	9.6 ± 0.3 (-6)	1.36 ± 0.07(-5)
^{137}Cs	1.5 ± 0.6 (-8)	2.3 ± 0.9 (-8)	**	**	**	**

** Not reported by plant.

Table B.6-4
UNIT NO. 1 TURBINE BUILDING CHARCOAL INLET RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/14—3/21/82	3/21--4/1/82	4/1--4/15/82	5/9--5/20/82	5/20--6/3/82	6/3--6/17/82
^{131}I	7.0 ± 0.1 (-4)	3.65 ± 0.06(-4)	1.92 ± 0.02(-4)	5.31 ± 0.05(-4)	1.61 ± 0.02(-4)	1.76 ± 0.04(-5)
^{133}I	1.81 ± 0.05(-3)	2.17 ± 0.05(-3)	7.7 ± 0.3 (-4)	<3(-4)	<6(-5)	2.6 ± 0.2 (-5)
^{135}I	5 ± 2 (-3)	3.7 ± 0.5 (-3)	*	*	*	7 ± 4 (-5)
^{134}Cs	<2(-6)	<6(-7)	2.0 ± 0.5 (-6)	<2(-6)	3.3 ± 0.1 (-6)	6 ± 1 (-7)
^{137}Cs	<2(-6)	2.1 ± 0.4 (-6)	4.2 ± 0.5 (-6)	<2(-6)	5.9 ± 0.3 (-6)	1.5 ± 0.2 (-6)
^{51}Cr	<2(-5)	<4(-6)	1.3 ± 0.5 (-5)	<6(-6)	8.9 ± 0.6 (-6)	2.36 ± 0.06(-5)
^{54}Mn	<2(-6)	<4(-7)	<6(-7)	<3(-6)	1.1 ± 0.1 (-6)	1.4 ± 0.1 (-6)
^{59}Fe	<3(-6)	<6(-7)	<2(-6)	<2(-6)	<6(-7)	1.1 ± 0.1 (-6)
^{60}Co	<4(-6)	1.5 ± 0.5 (-6)	<3(-6)	4 ± 1 (-6)	4.5 ± 0.3 (-6)	9 ± 2 (-7)
^{91}Sr	1.0 ± 0.1 (-3)	1.5 ± 0.1 (-3)	<2(-3)	<3(-3)	<3(-5)	<5(-5)
^{140}Ba	8.6 ± 0.6 (-6)	9.2 ± 0.2 (-7)	7.5 ± 0.4 (-5)	<5(-6)	<6(-7)	<2(-6)
^{141}Ce	*	9 ± 4 (-7)	1.5 ± 0.5 (-6)	<3(-6)	3 ± 1 (-7)	<6(-7)

* Radionuclide not measured.

Table B.6-5a
UNIT NO. 2 TURBINE BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/14—3/21/82	3/21--4/1/82	4/1--4/15/82	4/15—4/22/82	4/22--4/27/82	4/27--5/9/82
^{131}I	3.2 ± 0.3 (-5)	1.5 ± 0.2 (-5)	7.8 ± 0.7 (-6)	8 ± 2 (-6)	1.1 ± 0.1 (-5)	2.3 ± 0.2 (-5)
^{133}I	6 ± 1 (-5)	<7(-5)	<5(-5)	<6(-5)	<5(-5)	<8(-5)
^{134}Cs	<5(-7)	<5(-7)	<3(-7)	<5(-7)	<5(-7)	<3(-7)
^{137}Cs	<5(-7)	<2(-7)	<8(-7)	<6(-7)	<8(-7)	<3(-7)
^{51}Cr	<2(-6)	<8(-6)	<3(-6)	<4(-6)	<7(-6)	<3(-6)
^{54}Mn	<5(-7)	<2(-7)	<5(-7)	<2(-6)	<8(-7)	<6(-7)
^{59}Fe	<7(-7)	<2(-7)	<5(-7)	<8(-7)	<2(-6)	<5(-7)
^{58}Co	<4(-7)	<6(-7)	<3(-7)	<7(-7)	<8(-7)	<6(-7)
^{60}Co	<2(-6)	<7(-7)	10 ± 2 (-7)	<8(-7)	3.6 ± 0.7 (-6)	1.2 ± 0.4 (-6)
^{91}Sr	*	<2(-5)	*	*	<2(-3)	<2(-4)
^{140}Ba	<2(-6)	<2(-6)	<3(-6)	<3(-6)	<3(-6)	<2(-6)
^{141}Ce	<4(-7)	<2(-6)	<4(-7)	<8(-7)	<8(-7)	<6(-7)

Table B.6-5a (cont'd)
UNIT NO. 2 TURBINE BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	5/9--5/20/82	5/20--6/3/82	6/3--6/17/82	6/17--7/2/82	7/2--7/15/82	7/22--8/11/82
^{131}I	1.39 ± 0.07(-5)	5.5 ± 0.7 (-6)	1.3 ± 0.2 (-6)	7 ± 1 (-7)	<3(-7)	<2(-7)
^{133}I	<3(-5)	<7(-5)	<5(-6)	<4(-6)	<3(-6)	<3(-6)
^{134}Cs	<3(-7)	<2(-7)	<2(-7)	<2(-7)	<2(-7)	<9(-8)
^{137}Cs	<8(-7)	<3(-7)	<4(-7)	<4(-7)	<4(-7)	<1(-7)
^{51}Cr	<8(-6)	<2(-6)	<2(-6)	<2(-6)	<4(-7)	<1(-6)
^{54}Mn	<7(-7)	<3(-7)	<5(-7)	<4(-7)	<3(-7)	<3(-7)
^{59}Fe	<2(-6)	<4(-7)	<3(-7)	<2(-7)	<4(-7)	<2(-7)
^{60}Co	<8(-7)	<5(-7)	6 ± 2 (-7)	10 ± 2 (-7)	<7(-7)	5 ± 2 (-7)
^{91}Sr	<3(-4)	<3(-5)	<9(-5)	<2(-4)	<2(-4)	<2(-5)
^{140}Ba	<3(-6)	<7(-7)	<2(-6)	<8(-7)	<2(-6)	<9(-7)
^{141}Ce	<8(-7)	<3(-7)	<2(-6)	<4(-7)	<4(-7)	<9(-8)

Table B.6-5a (cont'd)
UNIT NO. 2 TURBINE BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time 9/29--10/14/82	10/14--10/21/82	10/21--10/27/82	10/27--11/9/82	11/9--11/17/82
^{131}I	5.1 ± 0.4 (-6)	2.8 ± 0.4 (-6)	<8(-6)	2.4 ± 0.4 (-6)	<3(-6)
^{133}I	9 ± 4 (-6)	1.3 ± 0.2 (-5)	<4(-5)	<3(-5)	<2(-5)
^{134}Cs	<3(-7)	<4(-7)	1.4 ± 0.3 (-6)	<4(-7)	<2(-6)
^{137}Cs	3 ± 1 (-7)	<4(-7)	3.2 ± 0.4 (-6)	<4(-7)	<2(-6)
^{51}Cr	<3(-6)	<3(-6)	<4(-6)	<4(-6)	<9(-6)
^{54}Mn	<2(-7)	<4(-7)	<1(-6)	<4(-7)	<9(-7)
^{59}Fe	<4(-7)	<1(-6)	<1(-6)	<1(-6)	<2(-6)
^{60}Co	<4(-7)	<8(-7)	<2(-6)	<1(-6)	<2(-6)
^{65}Zn	<3(-7)	<8(-7)	<1(-6)	<8(-6)	<2(-6)
^{91}Sr	<2(-4)	<3(-5)	<2(-4)	<8(-5)	<5(-5)
^{140}Ba	<2(-6)	<3(-6)	<2(-6)	<2(-6)	<3(-6)
^{141}Ce	<3(-7)	<1(-6)	<1(-6)	<8(-7)	<2(-6)

* Radionuclide not measured.

Table B.6-5b
UNIT NO. 2 TURBINE BUILDING RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	11/16--11/22/82	11/23--11/29/82	11/30--12/6/82	12/7--12/13/82	12/14--12/20/82	12/21--12/27/82
^{131}I	**	**	5 ± 1 (-8)	9 ± 2 (-7)	2.6 ± 0.6 (-6)	1.9 ± 0.2 (-6)
^{133}I	**	**	4.6 ± 0.6 (-7)	6 ± 1 (-6)	8 ± 1 (-6)	2.1 ± 0.3 (-6)
^{137}Cs	4 ± 2 (-8)	7 ± 4 (-8)	**	**	**	9 ± 7 (-8)

** Not reported by plant.

Table B.6-6
UNIT NO. 2 TURBINE BUILDING CHARCOAL INLET RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/14—3/21/82	3/21--4/1/82	4/1--4/15/82	4/15—4/22/82	4/22--4/27/82	4/27--5/9/82
^{131}I	1.47 ± 0.01(-3)	4.60 ± 0.07(-4)	5.40 ± 0.04(-4)	6.18 ± 0.07(-4)	3.39 ± 0.04(-4)	1.59 ± 0.01(-3)
^{133}I	3.44 ± 0.04(-3)	2.64 ± 0.05(-3)	4.19 ± 0.07(-3)	4.7 ± 0.1 (-3)	3.0 ± 0.2 (-4)	<8(-5)
^{135}I	4.4 ± 0.4 (-3)	*	*	*	*	*
^{134}Cs	1.3 ± 0.6 (-6)	<7(-7)	<6(-7)	<8(-7)	<8(-7)	<3(-7)
^{137}Cs	4.3 ± 0.7 (-6)	2.1 ± 0.4 (-6)	3.0 ± 0.4 (-6)	4.8 ± 0.4 (-6)	<8(-7)	<8(-7)
^{51}Cr	<2(-5)	<6(-6)	<5(-6)	<7(-6)	<2(-5)	<6(-6)
^{54}Mn	<3(-6)	<2(-6)	5 ± 2 (-7)	<8(-7)	<8(-7)	4 ± 1 (-7)
^{59}Fe	<2(-6)	<2(-6)	<8(-7)	<3(-6)	<2(-6)	<8(-7)
^{60}Co	2.9 ± 0.7 (-6)	<1(-6)	1.1 ± 0.3 (-6)	7.2 ± 0.6 (-6)	2.8 ± 0.7 (-6)	8 ± 2 (-7)
^{91}Sr	1.4 ± 0.1 (-3)	1.46 ± 0.07(-3)	*	*	<6(-4)	<6(-4)
^{140}Ba	1.58 ± 0.04(-4)	9 ± 3 (-5)	1.97 ± 0.04(-4)	1.96 ± 0.06(-4)	5.5 ± 0.1 (-5)	<3(-6)
^{141}Ce	4.3 ± 0.7 (-6)	1.5 ± 0.5 (-6)	3.1 ± 0.5 (-6)	2.7 ± 0.5 (-6)	<2(-6)	<8(-7)

Table B.6-6 (cont'd)
UNIT NO. 2 TURBINE BUILDING CHARCOAL INLET RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	5/9--5/20/82	5/20--6/17/82	6/17--7/2/82	10/21--10/27/82	10/27--11/9/82	11/9--11/17/82
^{131}I	8.40 ± 0.07(-4)	8.32 ± 0.08(-5)	5.1 ± 0.8 (-6)	*	1.79 ± 0.03(-5)	4.5 ± 0.8 (-6)
^{133}I	<5(-5)	<3(-5)	<8(-5)	*	3.12 ± 0.08(-5)	1.2 ± 0.8 (-5)
^{134}Cs	3.2 ± 0.3 (-6)	5.7 ± 0.1 (-6)	3.9 ± 0.8 (-8)	<4(-7)	2.0 ± 0.8 (-7)	<2(-6)
^{137}Cs	5.1 ± 0.7 (-5)	1.07 ± 0.04(-5)	6.6 ± 0.8 (-7)	1.7 ± 0.3 (-6)	7 ± 1 (-7)	<9(-7)
^{51}Cr	2.0 ± 0.2 (-5)	3.57 ± 0.08(-5)	8.6 ± 0.8 (-6)	<8(-6)	<1(-6)	<9(-6)
^{54}Mn	7.3 ± 0.7 (-6)	4.1 ± 0.2 (-6)	2.2 ± 0.1 (-6)	6 ± 3 (-7)	7 ± 1 (-7)	<9(-7)
^{59}Fe	1.5 ± 0.4 (-6)	5 ± 2 (-7)	1.4 ± 0.1 (-6)	<8(-7)	<3(-7)	<9(-7)
^{60}Co	1.80 ± 0.07(-5)	1.24 ± 0.03(-5)	8 ± 2 (-7)	<3(-6)	4.0 ± 0.3 (-6)	<3(-6)
^{91}Sr	<2(-4)	<9(-5)	*	3.2 ± 0.2 (-4)	<1(-4)	<5(-5)
^{140}Ba	<3(-6)	<9(-7)	<2(-6)	1.4 ± 0.1 (-5)	2.2 ± 0.3 (-6)	<4(-6)
^{141}Ce	9 ± 4 (-7)	3.3 ± 0.8 (-7)	<3(-7)	<1(-6)	<2(-7)	<2(-6)

* Radionuclide not measured.

Table B.6-7a
UNIT NO. 1 REACTOR BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/18--4/1/82	4/1--4/15/82	4/15--5/8/82	5/8--5/22/82	5/22--6/3/82	6/3--6/17/82
^{131}I	1.36 ± 0.03(-5)	1.47 ± 0.06(-5)	1.73 ± 0.06(-5)	1.45 ± 0.03(-5)	1.10 ± 0.04(-5)	8.9 ± 0.4 (-6)
^{132}I	1.12 ± 0.09(-4)	6 ± 2 (-5)	*	7.0 ± 0.3 (-5)	*	7.4 ± 0.7 (-5)
^{134}Cs	*	<7(-7)	5.8 ± 0.6 (-7)	5.2 ± 0.6 (-7)	3.8 ± 0.8 (-7)	6 ± 2 (-7)
^{137}Cs	*	<1(-6)	1.3 ± 0.1 (-6)	1.16 ± 0.09(-6)	1.2 ± 0.1 (-6)	6 ± 2 (-7)
^{24}Na	*	7 ± 1 (-4)	8.5 ± 0.2 (-4)	7.3 ± 0.1 (-4)	1.86 ± 0.04(-4)	1.06 ± 0.04(-3)
^{51}Cr	*	7.1 ± 0.1 (-3)	3.07 ± 0.03(-4)	2.72 ± 0.03(-4)	4.33 ± 0.04(-4)	3.33 ± 0.07(-4)
^{54}Mn	*	5.1 ± 0.1 (-5)	1.15 ± 0.03(-5)	1.01 ± 0.03(-5)	2.36 ± 0.02(-5)	2.9 ± 0.1 (-5)
^{59}Fe	*	1.9 ± 0.1 (-5)	7 ± 2 (-7)	7 ± 1 (-7)	2.3 ± 0.2 (-6)	1.11 ± 0.07(-5)
^{58}Co	*	1.9 ± 0.1 (-5)	1.8 ± 0.1 (-6)	1.6 ± 0.1 (-6)	4.3 ± 0.1 (-6)	7.4 ± 0.4 (-6)
^{60}Co	*	7.3 ± 0.1 (-5)	2.24 ± 0.06(-5)	1.94 ± 0.05(-5)	4.03 ± 0.08(-5)	4.40 ± 0.07(-5)
^{65}Zn	*	<7(-6)	<7(-7)	<6(-7)	<2(-6)	<2(-6)
^{91}Sr	*	*	*	<5(-5)	<4(-5)	<2(-3)
^{140}Ba	*	<7(-6)	<7(-7)	<6(-7)	<2(-6)	<3(-6)
^{141}Ce	*	<2(-6)	<3(-7)	<2(-7)	<2(-7)	<8(-7)

Table B.6-7a (cont'd)
UNIT NO. 1 REACTOR BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	6/17--7/2/82	7/2--7/22/82	7/22--8/11/82	10/10-10/21/82	10/21--10/27/82	10/27--11/9/82
^{131}I	7.8 ± 0.3 (-6)	8.6 ± 0.4 (-7)	3.6 ± 0.8 (-7)	6.0 ± 0.4 (-6)	a	a
^{133}I	2.0 ± 0.2 (-5)	*	<8(-6)	1.40 ± 0.08(-4)	a	a
^{134}Cs	<4(-7)	<4(-7)	<2(-7)	<4(-7)	<1(-6)	<5(-7)
^{137}Cs	9 ± 1 (-7)	1.1 ± 0.2 (-6)	1.12 ± 0.08(-6)	1.9 ± 0.3 (-6)	3.3 ± 0.1 (-5)	3.5 ± 0.4 (-6)
^{24}Na	1.6 ± 0.1 (-3)	3.12 ± 0.08(-3)	<8(-6)	1.5 ± 0.2 (-4)	8.6 ± 0.4 (-4)	3.87 ± 0.09(-3)
^{51}Cr	4.29 ± 0.04(-4)	3.87 ± 0.04(-4)	2.32 ± 0.08(-5)	5.3 ± 0.2 (-5)	1.00 ± 0.08(-4)	7.2 ± 0.2 (-4)
^{54}Mn	3.04 ± 0.04(-5)	1.99 ± 0.04(-5)	<4(-7)	7.8 ± 0.1 (-5)	9.8 ± 0.3 (-5)	6.5 ± 0.2 (-5)
^{59}Fe	1.29 ± 0.04(-5)	2.7 ± 0.8 (-6)	<4(-7)	8.0 ± 0.4 (-6)	6 ± 2 (-6)	6.6 ± 0.9 (-6)
^{58}Co	7.2 ± 0.2 (-6)	4.0 ± 0.4 (-6)	<2(-7)	5.0 ± 0.4 (-6)	9 ± 1 (-6)	1.19 ± 0.04(-5)
^{60}Co	4.10 ± 0.08(-5)	3.67 ± 0.08(-5)	<8(-7)	1.10 ± 0.01(-4)	1.29 ± 0.04(-4)	1.56 ± 0.02(-4)
^{65}Zn	<2(-6)	<4(-6)	<8(-7)	2.4 ± 0.4 (-6)	<8(-6)	<4(-6)
^{91}Sr	*	<4(-5)	*	<8(-5)	<8(-4)	<2(-3)
^{140}Ba	<3(-6)	<3(-6)	<8(-7)	<4(-6)	<1(-5)	<9(-6)
^{141}Ce	<3(-7)	<4(-7)	<1(-7)	<3(-7)	<3(-6)	<9(-7)

Table B.6-7a (cont'd)
UNIT NO. 1 REACTOR BUILDING EXHAUST RELEAST RATES
(microcuries/second)

Nuclide	Date and Time 11/9--11/17/82
^{131}I	3.7 ± 0.1 (-5)
^{133}I	3.4 ± 0.2 (-4)
^{134}Cs	<2(-6)
^{137}Cs	<4(-6)
^{24}Na	2.23 ± 0.07(-3)
^{51}Cr	2.6 ± 0.1 (-4)
^{54}Mn	4.5 ± 0.3 (-5)
^{59}Fe	<8(-6)
^{58}Co	4.7 ± 0.7 (-6)
^{60}Co	9.8 ± 0.3 (-5)
^{65}Zn	<4(-6)
^{91}Sr	<3(-4)
^{140}Ba	<8(-6)
^{141}Ce	<3(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.6-7b
UNIT NO. 1 REACTOR BUILDING RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	11/16--11/22/82	11/23--11/29/82	11/30--12/6/82	12/7--12/13/82	12/14--12/20/82	12/21--12/27/82
^{131}I	8 ± 2 (-6)	1.1 ± 0.3 (-5)	2.4 ± 0.3 (-5)	3 ± 2 (-6)	7 ± 3 (-6)	**
^{132}I	**	1.7 ± 0.5 (-5)	1.2 ± 0.4 (-4)	**	**	**
^{133}I	6 ± 1 (-5)	7 ± 1 (-5)	1.5 ± 0.1 (-4)	**	**	**
^{137}Cs	3 ± 3 (-7)	5 ± 5 (-7)	**	**	**	**
^{51}Cr	5 ± 2 (-5)	6.7 ± 0.5 (-4)	6.99 ± 0.01(-4)	5.7 ± 0.9 (-5)	**	**
^{54}Mn	1.1 ± 0.3 (-5)	1.6 ± 0.5 (-5)	2.9 ± 0.6 (-5)	1.8 ± 0.3 (-5)	1.08 ± 0.09(-4)	1.1 ± 0.4 (-5)
^{58}Co	**	**	**	1.4 ± 0.3 (-6)	2.8 ± 0.5 (-5)	**
^{60}Co	3.9 ± 0.6 (-5)	4.0 ± 0.8 (-5)	8.2 ± 0.9 (-5)	1.67 ± 0.07(-4)	3.6 ± 0.2 (-4)	4.3 ± 0.6 (-5)

** Not reported by plant.

Table B.6-8a
UNIT NO. 2 REACTOR BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/18--4/1/82	4/1--4/15/82	4/15--4/22/82	4/22—5/8/82	5/8--5/20/82	5/20--6/3/82
^{131}I	3.17 ± 0.02(-3)	1.47 ± 0.01(-3)	3.08 ± 0.04(-3)	2.62 ± 0.04(-3)	4.59 ± 0.09(-3)	4.1 ± 0.3 (-4)
^{132}I	2.1 ± 0.1 (-2)	*	*	*	*	*
^{133}I	1.84 ± 0.02(-2)	1.06 ± 0.02(-2)	2.64 ± 0.04(-2)	<2(-4)	<6(-5)	<2(-4)
^{135}I	3.4 ± 0.1 (-2)	*	3.4 ± 0.1 (-2)	*	*	*
^{134}Cs	1.02 ± 0.02(-4)	3.6 ± 0.1 (-5)	8.7 ± 0.2 (-5)	5.8 ± 0.1 (-5)	3.06 ± 0.05(-4)	9.5 ± 0.1 (-5)
^{137}Cs	1.6 ± 0.5 (-4)	6.0 ± 0.2 (-5)	1.50 ± 0.04(-4)	8.6 ± 0.1 (-5)	5.41 ± 0.03(-4)	1.44 ± 0.04(-4)
^{24}Na	*	1.5 ± 0.2 (-3)	2.79 ± 0.06(-3)	<2(-5)	<2(-5)	<6(-5)
^{51}Cr	1.73 ± 0.02(-3)	1.16 ± 0.01(-3)	4.56 ± 0.06(-3)	3.0 ± 0.1 (-4)	7.8 ± 0.2 (-4)	1.83 ± 0.06(-4)
^{54}Mn	5.8 ± 0.2 (-5)	4.7 ± 0.2 (-5)	1.84 ± 0.04(-4)	9.0 ± 0.2 (-5)	7.24 ± 0.05(-4)	2.11 ± 0.04(-4)
^{59}Fe	1.2 ± 0.5 (-5)	<4(-6)	8.6 ± 0.4 (-5)	2.1 ± 0.2 (-5)	1.63 ± 0.03(-4)	2.7 ± 0.1 (-5)
^{58}Co	2.3 ± 0.2 (-5)	7 ± 1 (-6)	4.9 ± 0.2 (-5)	1.7 ± 0.1 (-5)	2.2 ± 0.3 (-4)	9.2 ± 0.1 (-5)
^{60}Co	1.20 ± 0.02(-4)	8.3 ± 0.1 (-4)	6.18 ± 0.08(-4)	1.07 ± 0.02(-3)	2.2 ± 0.3 (-3)	8.4 ± 0.1 (-4)
^{65}Zn	1.2 ± 0.2 (-5)	6 ± 2 (-6)	3.0 ± 0.4 (-5)	10 ± 4 (-6)	1.12 ± 0.05(-4)	4.1 ± 0.3 (-5)
^{91}Sr	3.4 ± 0.2 (-3)	*	5.1 ± 0.2 (-3)	<4(-4)	<6(-4)	<5(-3)
^{95}Zr	*	*	*	*	3.4 ± 0.2 (-5)	5 ± 1 (-6)
^{99}Mo	2.8 ± 0.2 (-4)	2.7 ± 0.4 (-4)	7.8 ± 0.4 (-4)	<4(-5)	<7(-5)	<5(-5)
^{140}Ba	2.90 ± 0.09(-4)	1.81 ± 0.06(-4)	3.6 ± 0.1 (-4)	4.0 ± 0.4 (-5)	1.7 ± 0.5 (-6)	<2(-5)
^{141}Ce	1.4 ± 0.1 (-5)	1.1 ± 0.1 (-5)	2.4 ± 0.2 (-5)	3.8 ± 0.6 (-6)	4.1 ± 0.1 (-5)	6.0 ± 0.7 (-6)
^{144}Ce	*	*	*	*	2.4 ± 0.3 (-5)	<9(-6)

Table B.6-8a (cont'd)
UNIT NO. 2 REACTOR BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	6/3--6/17/82	6/17--7/2/82	7/2--7/15/82	7/22--8/11/82	9/29--10/14/82	10/14--10/21/82
^{131}I	4.1 ± 0.2 (-5)	2.4 ± 0.1 (-5)	a	<9(-6)	1.74 ± 0.04(-4)	1.69 ± 0.05(-4)
^{133}I	<2(-4)	<4(-5)	a	*	3.4 ± 0.4 (-4)	3.30 ± 0.05(-3)
^{135}I	*	*	*	*	*	8.1 ± 0.5 (-3)
^{134}Cs	6.8 ± 0.2 (-5)	3.90 ± 0.08(-5)	1.2 ± 0.1 (-5)	1.28 ± 0.07(-5)	2.8 ± 0.2 (-5)	2.76 ± 0.02(-5)
^{137}Cs	1.11 ± 0.03(-4)	7.0 ± 0.2 (-5)	1.4 ± 0.2 (-5)	2.26 ± 0.09(-5)	4.7 ± 0.2 (-5)	5.5 ± 0.3 (-5)
^{24}Na	<2(-4)	<2(-5)	*	*	<2(-5)	1.17 ± 0.03(-3)
^{51}Cr	9 ± 1 (-5)	8.6 ± 0.4 (-5)	<5(-5)	<2(-5)	<2(-5)	6.1 ± 0.2 (-4)
^{54}Mn	1.31 ± 0.03(-4)	1.54 ± 0.02(-4)	2.3 ± 0.5 (-5)	<2(-6)	5.6 ± 0.2 (-5)	8.1 ± 0.2 (-4)
^{59}Fe	2.0 ± 0.3 (-5)	2.9 ± 0.1 (-5)	<9(-6)	<2(-6)	<6(-6)	1.38 ± 0.05(-4)
^{58}Co	2.6 ± 0.2 (-5)	2.3 ± 0.1 (-5)	<5(-6)	<9(-7)	4.8 ± 0.8 (-6)	1.04 ± 0.05(-4)
^{60}Co	4.08 ± 0.09(-4)	3.86 ± 0.08(-4)	1.10 ± 0.07(-4)	<4(-6)	2.00 ± 0.04(-4)	1.34 ± 0.02(-3)
^{65}Zn	<2(-5)	<2(-5)	<1(-5)	<4(-6)	<8(-6)	8.6 ± 0.8 (-5)
^{91}Sr	<6(-3)	*	*	*	<1(-3)	<5(-4)
^{95}Zr	*	<4(-6)	*	*	*	<1(-5)
^{99}Mo	*	*	*	*	*	1.8 ± 0.3 (-4)
^{140}Ba	<2(-5)	<8(-6)	<1(-5)	*	<2(-5)	3 ± 1 (-5)
^{141}Ce	<6(-6)	1.5 ± 0.6 (-6)	<5(-6)	<9(-7)	<6(-6)	1.0 ± 0.3 (-5)

Table B.6-8a (cont'd)
UNIT NO. 2 REACTOR BUILDING EXHAUST RELEASE RATES
(microcuries/second)

Nuclide	Date and Time		
	10/21--10/27/82	10/27--11/9/82	11/9--11/17/82
^{131}I	*	1.01 ± 0.04(-4)	1.3 ± 0.4 (-5)
^{133}I	*	<5(-4)	<1(-3)
^{134}Cs	3.4 ± 0.1 (-5)	1.4 ± 0.2 (-5)	4.9 ± 0.8 (-6)
^{137}Cs	6.3 ± 0.2 (-5)	2.2 ± 0.4 (-5)	7 ± 1 (-6)
^{24}Na	6.94 ± 0.08(-3)	<5(-4)	<6(-6)
^{51}Cr	5.6 ± 0.2 (-4)	1.5 ± 0.2 (-4)	3.0 ± 0.8 (-5)
^{54}Mn	4.24 ± 0.05(-4)	2.93 ± 0.09(-4)	1.05 ± 0.04(-4)
^{59}Fe	5.7 ± 0.3 (-5)	4.2 ± 0.4 (-5)	1.4 ± 0.1 (-5)
^{58}Co	4.9 ± 0.5 (-5)	2.4 ± 0.4 (-5)	9.5 ± 0.8 (-6)
^{60}Co	5.6 ± 0.1 (-4)	4.16 ± 0.09(-4)	1.52 ± 0.04(-4)
^{65}Zn	3.9 ± 0.3 (-5)	<3(-5)	<2(-5)
^{91}Sr	4.3 ± 0.2 (-3)	*	<1(-4)
^{140}Ba	1.85 ± 0.08(-4)	<2(-5)	<1(-5)
^{141}Ce	<8(-6)	<5(-6)	<4(-6)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

Table B.6-8b
UNIT NO. 2 REACTOR BUILDING RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	11/16--11/22/82	11/23--11/29/82	11/30--12/6/82	12/7--12/13/82	12/14--12/20/82	12/21--12/27/82
^{131}I	8 ± 1 (-6)	1.4 ± 0.9 (-5)	3.3 ± 0.4 (-5)	1.2 ± 0.2 (-4)	2.4 ± 0.2 (-4)	4.7 ± 0.2 (-4)
^{132}I	**	**	**	4 ± 8 (-5)	2.2 ± 0.4 (-4)	2.0 ± 0.1 (-3)
^{133}I	**	**	3.75 ± 0.08(-4)	4.08 ± 0.04(-3)	1.34 ± 0.03(-3)	2.02 ± 0.04(-3)
^{135}I	**	**	6.8 ± 0.4 (-4)	2.21 ± 0.06(-3)	2.0 ± 0.1 (-3)	2.10 ± 0.09(-3)
^{134}Cs	6 ± 2 (-6)	3 ± 2 (-6)	1.6 ± 0.5 (-6)	1.7 ± 0.3 (-5)	6.4 ± 0.7 (-5)	2.1 ± 0.3 (-5)
^{137}Cs	1.2 ± 0.3 (-5)	2.1 ± 0.7 (-5)	1.1 ± 0.3 (-5)	3.3 ± 0.8 (-5)	1.07 ± 0.09(-4)	4.3 ± 0.7 (-5)
^{51}Cr	**	6 ± 3 (-6)	5 ± 1 (-5)	6 ± 2 (-5)	3.6 ± 0.4 (-4)	7.5 ± 0.8 (-4)
^{54}Mn	1.04 ± 0.06(-4)	2.1 ± 0.3 (-4)	4.0 ± 0.5 (-5)	1.2 ± 0.3 (-4)	8.2 ± 0.7 (-5)	4.0 ± 0.5 (-5)
^{59}Fe	**	5 ± 3 (-6)	**	**	**	**
^{58}Co	6 ± 2 (-6)	4 ± 1 (-6)	**	4 ± 2 (-7)	1.6 ± 0.7 (-6)	3 ± 1 (-6)
^{60}Co	1.72 ± 0.08(-4)	3.7 ± 0.4 (-4)	7.1 ± 0.6 (-5)	2.4 ± 0.2 (-4)	3.0 ± 0.2 (-4)	1.8 ± 0.2 (-4)

** Not reported by plant.

Table B.6-9
RAD WASTE BUILDING RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	3/14--3/21/82	3/21--4/1/82	4/1--4/15/82	4/15--4/22/82	4/22--5/9/82	5/9--5/20/82
^{131}I	2.84 ± 0.05(-4)	9.0 ± 0.3 (-5)	1.13 ± 0.03(-4)	1.04 ± 0.02(-3)	2.70 ± 0.08(-4)	1.74 ± 0.05(-4)
^{132}I	*	*	*	4.1 ± 0.9 (-3)	*	*
^{133}I	2.7 ± 0.3 (-4)	2.0 ± 0.3 (-4)	4.7 ± 0.9 (-4)	9.6 ± 0.2 (-3)	<2(-4)	<2(-4)
^{135}I	<2(-3)	*	*	7.1 ± 0.8 (-3)	*	*
^{134}Cs	2.7 ± 0.1 (-5)	2.0 ± 0.1 (-5)	3.51 ± 0.08(-5)	1.64 ± 0.09(-5)	1.22 ± 0.02(-4)	2.1 ± 0.1 (-5)
^{137}Cs	4.8 ± 0.3 (-5)	3.6 ± 0.3 (-5)	7.7 ± 0.2 (-5)	3.2 ± 0.2 (-5)	2.49 ± 0.03(-4)	4.4 ± 0.2 (-5)
^{24}Na	*	*	*	1.23 ± 0.03(-3)	<3(-5)	<2(-4)
^{51}Cr	4.0 ± 0.1 (-4)	6.9 ± 0.2 (-4)	1.33 ± 0.01(-3)	1.05 ± 0.01(-3)	1.92 ± 0.02(-3)	6.2 ± 0.1 (-4)
^{54}Mn	1.59 ± 0.03(-4)	1.83 ± 0.08(-4)	2.72 ± 0.06(-4)	2.9 ± 0.2 (-5)	5.8 ± 0.1 (-4)	1.38 ± 0.03(-4)
^{59}Fe	3.9 ± 0.3 (-5)	4.8 ± 0.3 (-5)	7.5 ± 0.2 (-5)	<5(-6)	6.3 ± 0.2 (-5)	2.6 ± 0.2 (-5)
^{58}Co	2.9 ± 0.2 (-5)	3.3 ± 0.2 (-5)	4.0 ± 0.1 (-5)	4.0 ± 0.9 (-6)	6.6 ± 0.5 (-5)	2.0 ± 0.1 (-5)
^{60}Co	2.69 ± 0.05(-4)	3.03 ± 0.05(-4)	5.36 ± 0.08(-4)	2.0 ± 0.5 (-4)	1.73 ± 0.03(-3)	3.03 ± 0.06(-4)
^{65}Zn	6 ± 2 (-6)	9 ± 3 (-6)	3.0 ± 0.5 (-5)	<2(-5)	4.8 ± 0.5 (-5)	:2(-5)
^{91}Sr	<2(-4)	<2(-4)	*	<2(-3)	<2(-3)	*
^{99}Mo	*	*	*	1.9 ± 0.1 (-4)	<6(-5)	<6(-5)
^{140}Ba	<2(-5)	2.7 ± 0.5 (-5)	6.5 ± 0.5 (-5)	3.0 ± 0.3 (-5)	6.8 ± 0.5 (-5)	<2(-5)
^{141}Ce	*	*	5.3 ± 0.6 (-6)	<3(-6)	4.5 ± 0.6 (-6)	2.6 ± 0.8 (-6)

Table B.6-9 (cont'd)
RAD WASTE BUILDING RELEASE RATES
(microcuries/second)

Nuclide	Date and Time					
	5/20--6/3/82	6/3--6/17/82	6/17--7/2/82	7/2--7/22/82	7/22--8/11/82	10/21--10/27/82
^{131}I	2 ± 1 (-4)	3.5 ± 0.2 (-5)	1.2 ± 0.1 (-5)	7 ± 1 (-6)	<5(-6)	1.1 ± 0.1 (-4)
^{133}I	<2(-4)	<8(-5)	*	<5(-5)	<2(-4)	8.3 ± 0.8 (-4)
^{134}Cs	2.36 ± 0.02(-4)	4.1 ± 0.2 (-5)	6.77 ± 0.09(-5)	2.36 ± 0.03(-4)	1.05 ± 0.03(-5)	5.0 ± 0.2 (-5)
^{137}Cs	3.44 ± 0.03(-4)	5.4 ± 0.6 (-5)	9.8 ± 0.2 (-5)	3.33 ± 0.05(-4)	1.89 ± 0.05(-5)	9.9 ± 0.5 (-5)
^{24}Na	<4(-5)	<3(-5)	<3(-4)	1.1 ± 0.5 (-5)	<2(-5)	<2(-5)
^{51}Cr	6.45 ± 0.09(-4)	1.26 ± 0.03(-4)	1.05 ± 0.05(-4)	4.44 ± 0.08(-4)	2.9 ± 0.2 (-5)	8.0 ± 0.8 (-5)
^{54}Mn	3.23 ± 0.05(-4)	6.9 ± 0.2 (-5)	1.05 ± 0.02(-4)	4.40 ± 0.09(-4)	5.3 ± 0.2 (-5)	2.88 ± 0.05(-4)
^{59}Fe	9.6 ± 0.3 (-5)	1.31 ± 0.05(-5)	2 ± 1 (-5)	6.6 ± 0.2 (-5)	3.3 ± 0.6 (-6)	1.05 ± 0.03(-5)
^{58}Co	9.8 ± 0.3 (-5)	1.44 ± 0.05(-5)	2.2 ± 0.1 (-5)	9.3 ± 0.3 (-5)	5.7 ± 0.5 (-6)	2.7 ± 0.2 (-5)
^{60}Co	8.0 ± 0.1 (-4)	1.97 ± 0.03(-4)	3.45 ± 0.08(-4)	1.32 ± 0.02(-3)	1.82 ± 0.03(-4)	7.7 ± 0.1 (-4)
^{65}Zn	4.2 ± 0.2 (-5)	7.4 ± 0.9 (-6)	1.5 ± 0.2 (-6)	4.8 ± 0.2 (-5)	<3(-5)	<3(-5)
^{91}Sr	<5(-4)	<6(-4)	*	<2(-4)	<3(-4)	<3(-4)
^{95}Zr	7 ± 1 (-6)	<2(-6)	<3(-6)	4.1 ± 0.8 (-6)	<2(-6)	6 ± 3 (-6)
^{140}Ba	<2(-5)	<2(-6)	<5(-6)	<5(-6)	<5(-6)	<3(-5)
^{141}Ce	5.4 ± 0.6 (-6)	<2(-6)	<9(-7)	3.5 ± 0.8 (-6)	<8(-7)	<5(-6)
^{144}Ce	*	*	*	4 ± 1 (-6)	<3(-6)	<2(-5)

Table B.6-9 (cont'd)
RAD WASTE BUILDING RELEASE RATES
(microcuries/second)

Nuclide	Date and Time 10/27--11/9/82	11/9--11/17/82
^{131}I	4.1 ± 0.2 (-5)	<2(-5)
^{133}I	<6(-5)	<6(-5)
^{134}Cs	4.7 ± 0.2 (-5)	9 ± 2 (-6)
^{137}Cs	8.4 ± 0.3 (-5)	1.4 ± 0.3 (-5)
^{24}Na	<2(-5)	<3(-5)
^{51}Cr	4.2 ± 0.6 (-5)	<5(-5)
^{54}Mn	1.22 ± 0.03(-4)	5.9 ± 0.3 (-5)
^{59}Fe	6 ± 2 (-6)	<8(-6)
^{58}Co	1.1 ± 0.1 (-5)	1.5 ± 0.3 (-5)
^{60}Co	3.42 ± 0.06(-4)	1.98 ± 0.08(-4)
^{65}Zn	<2(-5)	<2(-5)
^{91}Sr	<3(-4)	<2(-4)
^{140}Ba	<2(-5)	<2(-5)
^{141}Ce	<2(-6)	<5(-6)

* Radionuclide not measured.

Table B.6-10
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	3/9 -- 3/15/82	3/16--3/22/82	3/23--3/29/82	3/30--4/5/82	4/6--4/12/82	4/13--4/19/82
^{131}I	5.99 ± 0.01(-2)	2.26 ± 0.01(-2)	1.85 ± 0.01(-2)	1.52 ± 0.01(-2)	1.69 ± 0.01(-2)	1.74 ± 0.01(-2)
^{132}I	**	3.2 ± 0.2 (-3)	1.8 ± 0.1 (-2)	**	**	**
^{133}I	1.99 ± 0.01(-1)	6.75 ± 0.01(-2)	7.59 ± 0.05(-2)	7.98 ± 0.07(-2)	6.80 ± 0.03(-2)	7.19 ± 0.02(-2)
^{135}I	**	7.7 ± 0.2 (-3)	8.6 ± 0.4 (-2)	6.2 ± 0.4 (-3)	7.8 ± 0.4 (-2)	8.8 ± 0.3 (-2)
^{134}Cs	**	**	**	**	**	2.5 ± 0.4 (-6)
^{137}Cs	1.9 ± 0.3 (-5)	8 ± 1 (-5)	9.0 ± 0.7 (-5)	8 ± 1 (-5)	4.1 ± 0.4 (-5)	5.0 ± 0.4 (-5)
^{51}Cr	**	**	**	**	**	1.5 ± 0.2 (-5)
^{54}Mn	**	4.6 ± 0.3 (-5)	3.0 ± 0.2 (-4)	1.6 ± 0.6 (-5)	**	1.8 ± 0.3 (-6)
^{58}Co	**	**	**	2 ± 2 (-7)	2 ± 2 (-6)	**
^{60}Co	**	1.29 ± 0.09(-5)	1.3 ± 0.1 (-4)	7 ± 1 (-5)	2.8 ± 0.6 (-5)	4.0 ± 0.6 (-6)
^{91}Sr	**	**	**	**	**	**
^{140}Ba	3.02 ± 0.03(-3)	1.40 ± 0.02(-2)	1.63 ± 0.01(-2)	5.68 ± 0.08(-3)	6.59 ± 0.04(-3)	6.43 ± 0.04(-3)
^{140}La	7.35 ± 0.06(-3)	2.22 ± 0.02(-2)	1.42 ± 0.01(-2)	6.21 ± 0.07(-3)	4.62 ± 0.03(-3)	4.24 ± 0.02(-3)

** Not reported by plant.

Table B.6-10 (cont'd)
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	4/20 --- 4/26/82	4/27--5/3/82	5/4--5/10/82	5/11--5/17/82	5/18--5/24/82	5/25--5/31/82
^{131}I	3.27 ± 0.01(-2)	2.46 ± 0.03(-3)	8.6 ± 0.1 (-4)	2.75 ± 0.07(-4)	2.53 ± 0.05(-4)	2.32 ± 0.04(-4)
^{132}I	**	**	**	2 ± 1 (-5)	3 ± 1 (-4)	5.0 ± 0.2 (-4)
^{133}I	5.52 ± 0.02(-2)	2.9 ± 0.4 (-4)	3.8 ± 0.4 (-4)	4.4 ± 0.2 (-4)	3.9 ± 0.1 (-4)	2.6 ± 0.2 (-5)
^{135}I	**	**	**	**	**	**
^{134}Cs	3.0 ± 0.4 (-5)	7 ± 1 (-6)	9 ± 2 (-6)	2 ± 1 (-6)	1.0 ± 0.2 (-5)	2.7 ± 0.2 (-5)
^{137}Cs	7.8 ± 0.4 (-5)	1.5 ± 0.1 (-5)	3.5 ± 0.2 (-5)	1.2 ± 0.3 (-5)	1.9 ± 0.1 (-5)	3.7 ± 0.2 (-5)
^{51}Cr	1.8 ± 0.2 (-4)	4.2 ± 0.6 (-5)	9 ± 1 (-5)	5 ± 1 (-5)	2.7 ± 0.5 (-5)	3.2 ± 0.6 (-5)
^{54}Mn	2.3 ± 0.4 (-5)	3.1 ± 0.2 (-5)	7.5 ± 0.3 (-5)	2.6 ± 0.3 (-5)	2.5 ± 0.2 (-5)	3.1 ± 0.2 (-5)
^{58}Co	2.9 ± 0.8 (-7)	3 ± 1 (-6)	**	3 ± 1 (-7)	3 ± 1 (-6)	3.8 ± 0.9 (-6)
^{60}Co	5.3 ± 0.7 (-5)	9.0 ± 0.3 (-5)	2.20 ± 0.06(-4)	8.6 ± 0.6 (-5)	7.8 ± 0.3 (-5)	9.9 ± 0.4 (-5)
^{91}Sr	**	**	**	**	**	**
^{140}Ba	5.36 ± 0.04(-3)	2.7 ± 0.5 (-5)	1.09 ± 0.08(-4)	**	**	**
^{140}La	4.23 ± 0.03(-3)	1.4 ± 0.2 (-5)	**	**	**	**

** Not reported by plant.

Table B.6-10 (cont'd)
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	6/1 -- 7/7/82	6/8--6/14/82	6/15--6/21/82	6/22--6/28/82	6/29--7/5/82	7/6--7/12/82
^{131}I	1.77 ± 0.06(-4)	1.53 ± 0.04(-4)	1.40 ± 0.03(-4)	1.44 ± 0.03(-4)	5.0 ± 0.2 (-5)	9.9 ± 0.2 (-5)
^{132}I	**	**	**	4 ± 1 (-5)	2.1 ± 0.6 (-4)	8 ± 3 (-4)
^{133}I	5.7 ± 0.2 (-4)	7.2 ± 0.2 (-4)	2.09 ± 0.05(-4)	7.5 ± 0.2 (-4)	4.7 ± 0.1 (-4)	3.9 ± 0.2 (-4)
^{135}I	**	5.2 ± 0.7 (-6)	5.6 ± 0.8 (-5)	8 ± 1 (-5)	4.3 ± 0.7 (-4)	5 ± 1 (-4)
^{134}Cs	1.9 ± 0.3 (-5)	6.1 ± 0.3 (-5)	1.9 ± 0.2 (-5)	1.1 ± 0.1 (-5)	**	2.4 ± 0.2 (-6)
^{137}Cs	3.4 ± 0.3 (-5)	9.1 ± 0.3 (-5)	4.0 ± 0.2 (-5)	2.0 ± 0.2 (-5)	7 ± 1 (-6)	3.9 ± 0.2 (-6)
^{51}Cr	4 ± 1 (-5)	3.4 ± 0.8 (-5)	2.2 ± 0.7 (-5)	2.1 ± 0.3 (-5)	**	1.08 ± 0.06(-5)
^{54}Mn	4.6 ± 0.4 (-5)	4.9 ± 0.2 (-5)	4.8 ± 0.3 (-5)	2.2 ± 0.2 (-5)	1.5 ± 0.2 (-5)	2.7 ± 0.2 (-5)
^{58}Co	2.1 ± 0.9 (-6)	**	1.7 ± 0.6 (-7)	2.2 ± 0.7 (-6)	**	**
^{60}Co	1.40 ± 0.08(-4)	1.43 ± 0.04(-4)	1.66 ± 0.04(-4)	5.3 ± 0.3 (-5)	4.7 ± 0.3 (-5)	6.7 ± 0.4 (-5)
^{91}Sr	**	**	**	**	**	**
^{140}Ba	**	**	**	**	**	**
^{140}La	**	**	**	**	**	**

** Not reported by plant.

Table B.6-10 (cont'd)
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	7/13--7/19/82	7/20--7/26/82	7/27--8/2/82	8/3 -- 8/9/82	8/10--8/16/82	8/17--8/23/82
^{131}I	6.4 ± 0.2 (-5)	6 ± 2 (-6)	**	**	**	**
^{133}I	1.6 ± 0.1 (-4)	**	**	**	**	**
^{134}Cs	2.8 ± 0.2 (-5)	4.8 ± 0.6 (-5)	3.8 ± 0.5 (-5)	4 ± 2 (-6)	6 ± 3 (-6)	2.8 ± 0.4 (-6)
^{137}Cs	4.6 ± 0.2 (-5)	7.1 ± 0.6 (-5)	8.8 ± 0.9 (-5)	2.0 ± 0.4 (-5)	2.2 ± 0.5 (-5)	2.7 ± 0.6 (-5)
^{51}Cr	1.20 ± 0.07(-4)	3 ± 5 (-5)	10 ± 2 (-5)	1.7 ± 0.7 (-5)	**	**
^{54}Mn	3.6 ± 0.2 (-5)	8.4 ± 0.7 (-5)	1.5 ± 0.1 (-4)	7.2 ± 0.5 (-5)	4.8 ± 0.5 (-5)	7.7 ± 0.9 (-5)
^{58}Co	**	1.3 ± 0.4 (-5)	1.8 ± 0.4 (-5)	**	**	10 ± 3 (-7)
^{60}Co	1.02 ± 0.04(-4)	3.7 ± 0.1 (-4)	6.5 ± 0.2 (-4)	3.1 ± 0.1 (-4)	2.3 ± 0.1 (-4)	3.3 ± 0.2 (-4)
^{91}Sr	**	**	**	**	**	**
^{140}Ba	**	**	**	**	**	**
^{140}La	**	**	**	**	**	**

** Not reported by plant.

Table B.6-10 (cont'd)
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	8/24 -- 8/30/82	8/31--9/6/82	9/7--9/13/82	9/14--9/20/82	9/21--9/27/82	9/28--10/4/82
^{131}I	**	**	**	**	**	6.32 ± 0.01(-3)
^{133}I	**	**	**	**	**	1.04 ± 0.02(-2)
^{135}I	**	**	**	**	**	2.7 ± 0.4 (-2)
^{134}Cs	3.8 ± 0.6 (-5)	6 ± 4 (-6)	1.4 ± 0.2 (-5)	8 ± 2 (-6)	**	**
^{137}Cs	7.8 ± 0.5 (-5)	1.3 ± 0.3 (-5)	1.8 ± 0.2 (-5)	1.5 ± 0.2 (-5)	3.8 ± 0.7 (-6)	6 ± 1 (-7)
^{54}Mn	1.57 ± 0.07(-4)	2.2 ± 0.3 (-5)	3.3 ± 0.2 (-5)	1.9 ± 0.2 (-5)	1.15 ± 0.09(-5)	9 ± 1 (-7)
^{58}Co	1.3 ± 0.4 (-5)	3 ± 2 (-7)	3 ± 2 (-6)	**	**	**
^{60}Co	5.9 ± 0.1 (-4)	9.1 ± 0.6 (-5)	1.13 ± 0.05(-4)	7.9 ± 0.5 (-5)	3.0 ± 0.2 (-5)	3.2 ± 0.2 (-6)
^{91}Sr	**	**	**	**	**	**
^{140}Ba	**	**	**	**	**	**
^{140}La	**	**	**	**	**	**

** Not reported by plant.

Table B.6-10 (cont'd)
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	10/5--10/11/82	10/12--10/18/82	10/19--10/25/82	10/26--11/1/82	11/2--11/8/82	11/9--11/15/82
^{131}I	1.72 ± 0.01(-1)	1.67 ± 0.01(-2)	1.89 ± 0.01(-1)	1.49 ± 0.01(-1)	7.9 ± 0.1 (-4)	5.14 ± 0.09(-4)
^{132}I	1.73 ± 0.09(-3)	1.14 ± 0.07(-2)	**	1.4 ± 0.3 (-4)	1.8 ± 0.4 (-3)	1.4 ± 0.5 (-3)
^{133}I	2.88 ± 0.04(-1)	1.26 ± 0.01(-1)	1.32 ± 0.01 (0)	1.21 ± 0.01(-1)	2.47 ± 0.04(-3)	2.16 ± 0.04(-3)
^{135}I	7 ± 1 (-1)	1.73 ± 0.05(-1)	6.2 ± 0.2 (-1)	1.7 ± 0.2 (-4)	2.3 ± 0.2 (-3)	2.9 ± 0.3 (-3)
^{134}Cs	3 ± 1 (-6)	5 ± 1 (-6)	1.9 ± 0.3 (-6)	2.3 ± 0.4 (-5)	9 ± 3 (-6)	1.7 ± 0.3 (-5)
^{137}Cs	2.2 ± 0.4 (-5)	**	2.0 ± 0.3 (-5)	3.4 ± 0.7 (-5)	2.1 ± 0.3 (-5)	4.4 ± 0.5 (-5)
^{51}Cr	**	**	3 ± 1 (-5)	2.8 ± 0.3 (-4)	1.3 ± 0.2 (-4)	2 ± 1 (-5)
^{54}Mn	3.5 ± 0.5 (-5)	1.6 ± 0.2 (-5)	3.3 ± 0.4 (-5)	6.6 ± 0.5 (-5)	6.8 ± 0.5 (-5)	1.16 ± 0.09(-4)
^{58}Co	2.9 ± 0.5 (-5)	**	**	1.3 ± 0.3 (-6)	1.5 ± 0.3 (-5)	5 ± 2 (-6)
^{60}Co	1.12 ± 0.09(-4)	8.8 ± 0.5 (-5)	2.8 ± 0.3 (-4)	2.7 ± 0.1 (-4)	3.8 ± 0.1 (-4)	5.7 ± 0.2 (-4)
^{91}Sr	1.4 ± 0.2 (-7)	5.1 ± 0.8 (-5)	**	**	**	**
^{140}Ba	**	**	**	**	**	**
^{140}La	**	**	**	**	**	**

** Not reported by plant.

Table B.6-10 (cont'd)
MAIN STACK RADIONUCLIDE RELEASE RATES (PLANT DATA)
(microcuries/second)

Nuclide	Dates					
	11/16--11/22/82	11/23--11/29/82	11/30--12/6/82	12/7--12/13/82	12/14--12/20/82	12/21--12/27/82
^{131}I	2.07 ± 0.08(-4)	3.2 ± 0.1 (-4)	3.09 ± 0.01(-2)	2.32 ± 0.01(-1)	1.18 ± 0.01(-1)	1.26 ± 0.01(-1)
^{132}I	1 ± 2 (-4)	1.3 ± 0.1 (-3)	2.2 ± 0.8 (-2)	**	**	**
^{133}I	9 ± 3 (-5)	1.04 ± 0.04(-3)	3.10 ± 0.01(-1)	2.07 ± 0.01 (0)	6.69 ± 0.02(-1)	5.32 ± 0.06(-1)
^{135}I	4 ± 4 (-5)	7.0 ± 0.2 (-3)	3.01 ± 0.04(-1)	5.5 ± 0.3 (-2)	7.3 ± 0.3 (-1)	**
^{137}Cs	1.6 ± 0.3 (-5)	7 ± 3 (-6)	2.0 ± 0.5 (-5)	3.3 ± 0.3 (-5)	1.6 ± 0.1 (-5)	**
^{51}Cr	**	**	2.5 ± 0.1 (-5)	2.9 ± 0.2 (-4)	2.5 ± 0.7 (-5)	**
^{54}Mn	2.9 ± 0.4 (-5)	2.7 ± 0.5 (-5)	2.1 ± 0.5 (-5)	7.0 ± 0.3 (-5)	1.16 ± 0.06(-4)	7 ± 1 (-5)
^{60}Co	1.54 ± 0.09(-4)	1.0 ± 0.1 (-4)	1.14 ± 0.08(-4)	2.50 ± 0.07(-4)	4.9 ± 0.1 (-4)	2.5 ± 0.1 (-4)
^{91}Sr	**	**	**	**	**	**
^{140}Ba	**	**	**	**	1.5 ± 0.1 (-4)	**
^{140}La	**	**	**	**	**	**

** Not reported by plant.

Table 8.6-11
UNIT NO. 2 REACTOR BUILDING SAMPLE SINK IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/18-	^{131}I	3.7 ± 0.2 (-12)	1.1 ± 0.1 (-11)	1.1 ± 0.1 (-11)	6.9 ± 0.2 (-12)	3.6 ± 0.6 (-13)	3.3 ± 0.1 (-11)
	^{132}I	<5.0(-11)	<8.9(-11)	<7.5 (-11)	<4.0 (-11)	<2.4 (-11)	
	^{133}I	<2.0 ± 0.1 (-11)	5.5 ± 0.2 (-11)	3.2 ± 0.2 (-11)	7.6 ± 0.8 (-12)	<8(-13)	1.2 ± 0.1 (-10)
	^{135}I	2.6 ± 0.9 (-11)	8 ± 1 (-11)	5 ± 2 (-11)	<3(-11)	<2(-11)	1.7 ± 0.3 (-10)
04/01-	^{131}I	3.5 ± 0.1 (-12)	1.5 ± 0.1 (-11)	8.4 ± 0.2 (-12)	3.9 ± 0.1 (-12)	<3(-13)	3.0 ± 0.1 (-11)
	^{133}I	3.4 ± 0.4 (-11)	1.1 ± 0.1 (-10)	4.9 ± 0.3 (-11)	8 ± 2 (-12)	<9(-12)	2.0 ± 0.1 (-10)
04/15-	^{131}I	1.6 ± 0.1 (-12)	9 ± 2 (-13)	1.2 ± 0.2 (-12)	4.6 ± 0.4 (-12)	1.3 ± 0.5 (-13)	8.4 ± 0.5 (-12)
	^{133}I	1.5 ± 0.5 (-12)	4.4 ± 0.5 (-12)	6 ± 1 (-12)	6 ± 2 (-11)	<1(-12)	4.8 ± 0.2 (-11)

Table B.6-12
UNIT NO. 1 TURBINE BUILDING EXHAUST IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	uci/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/14-03/21	^{131}I	<1(-13)	<3(-13)	<2(-13)	6.8 ± 0.2 (-12)	<1(-13)	7.0 ± 0.3 (-12)
	^{133}I	<1(-11)	<2(-11)	<6(-13)	1.2 ± 0.1 (-11)	<7(-13)	2 ± 1 (-11)
03/21-04/01	^{131}I	<7(-13)	<2(-13)	<2(-13)	1.9 ± 0.1 (-12)	<3(-13)	2.2 ± 0.3 (-12)
	^{133}I	<7(-13)	<2(-12)	*	5 ± 1 (-12)	<2(-12)	a
04/01-04/15	^{131}I	2.3 ± 0.5 (-13)	<2(-13)	<8(-14)	1.04 ± 0.06(-12)	<1(-13)	1.4 ± 0.1 (-12)
	^{133}I	<1(-12)	<4(-12)	<1(-12)	6 ± 1 (-12)	<5(-12)	1.0 ± 0.3 (-11)
04/15-04/22	^{131}I	<2(-13)	<3(-13)	<5(-13)	8.9 ± 0.6 (-13)	<2(-13)	1.3 ± 0.3 (-12)
	^{133}I	<3(-12)	<2(-12)	<2(-12)	3.8 ± 0.5 (-12)	<1(-11)	6 ± 2 (-12)
04/22-04/26	^{131}I	<2(-12)	<2(-12)	<2(-12)	<2(-12)	<2(-12)	<6(-12)
	^{133}I	<2(-10)	<9(-11)	<1(-10)	<2(-10)	<1(-10)	<5(-10)
05/09-05/20	^{131}I	<2(-13)	5.53 ± 0.06(-13)	<2(-13)	2.9 ± 0.1 (-12)	<1(-13)	3.6 ± 0.1 (-12)
	^{133}I	<5(-12)	<3(-12)	<4(-12)	<5(-12)	<3(-12)	<2(-11)
05/20-06/03	^{131}I	<3(-14)	<8(-14)	<6(-14)	1.03 ± 0.05(-12)	1.0 ± 0.3 (-13)	1.20 ± 0.08(-12)
	^{133}I	<3(-13)	<2(-12)	<1(-12)	<1(-12)	<2(-12)	<4(-12)
06/03-06/17	^{131}I	<2(-13)	c	c	c	1) 1.4 ± 0.5 (-13) 2) <6(-14)	1.4 ± 0.5 (-13)
	^{133}I	<9(-13)	c	c	c	1) <6(-13) 2) <5(-13)	<6(-13)
	^{135}I	<2(-11)	c	c	c	1) <3(-11) 2) <6(-12)	<3(-11)
06/17-07/02	^{131}I	<6(-14)	c	c	c	1) <1(-13) 2) <8(-14)	<1(-13)
	^{133}I	<2(-12)	c	c	c	1) <1(-12) 2) <2(-12)	<1(-12)
07/02-07/15	^{131}I	<1(-13)	c	c	c	1) <1(-14) 2) <1(-13)	<1(-14)
	^{133}I	<1(-12)	c	c	c	1) <1(-12) 2) <1(-12)	<1(-12)

Table B.6-12 (cont'd)
UNIT NO. 1 TURBINE BUILDING EXHAUST IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
07/22-08/11	^{131}I	<5(-14)	c	c	c	1) <4(-14) 2) <1(-13)	<4(-14)
	^{133}I	<9(-13)	c	c	c	1) <8(-13)	<8(-13)
09/29-10/14	^{131}I	<8(-14)	c	c	c	1) 1.55 ± 0.08(-12) 2) <1(-13)	1.55 ± 0.08(-12)
	^{133}I	<3(-12)	c	c	c	1) <6(-12) 2) <2(-12)	<6(-12)
10/14-10/21	^{131}I ^{133}I	c	c	c	c	1) 4.4 ± 0.6 (-13) 2) <6(-13)	4.4 ± 0.6 (-13)
	^{135}I	c	c	c	c	1) 4.1 ± 0.5 (-12) 2) <5(-12)	4.1 ± 0.5 (-12)
		c	c	c	c	1) 1.5 ± 0.6 (-11) 2) <3(-10)	1.5 ± 0.6 (-11)
10/21-10/27	^{131}I	<1(-13)	<3(-13)	<9(-13)	1.2 ± 0.2 (-12)		1.8 ± 0.5 (-12)
	^{133}I	<1(-10)	<3(-12)	<4(-12)	4 ± 1 (-12)		8 ± 3 (-12)
10/27-11/07	^{131}I	<2(-13)	<1(-13)	<8(-14)	8.3 ± 0.5 (-13)	<2(-13)	9.2 ± 0.8 (-13)
	^{133}I	<5(-12)	<1(-12)	<1(-12)	<2(-12)	<3(-12)	<4(-13)
11/09-11/17	^{131}I	<3(-13)	<2(-13)	<1(-13)	<2(-13)	<1(-13)	<5(-13)
	^{133}I	<2(-12)	<7(-13)	<1(-12)	<7(-13)	<1(-12)	<2(-12)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

c. Species sampler not used.

Table 8.6-13
UNIT NO. 1 TURBINE BUILDING CHARCOAL BED INLET IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/14-03/21	^{131}I	1.98 ± 0.05(-11)	4.16 ± 0.09(-11)	2.89 ± 0.8 (-11)	3.11 ± 0.07(-11)	1.2 ± 0.2 (-12)	1.23 ± 0.02(-10)
	^{133}I	7.8 ± 0.4 (-11)	1.04 ± 0.03(-10)	8.3 ± 0.5 (-11)	4.9 ± 0.3 (-11)	3 ± 2 (-12)	3.17 ± 0.08(-10)
	^{135}I	1.3 ± 0.2 (-10)	1.0 ± 0.1 (-10)	<4(-10)	<3(-10)	<2(-10)	8 ± 4 (-10)
03/21-04/01	^{131}I	7.9 ± 0.1 (-12)	2.36 ± 0.07(-11)	1.52 ± 0.06(-11)	1.66 ± 0.03(-11)	6 ± 1 (-13)	6.4 ± 0.1 (-11)
	^{133}I	7.6 ± 0.2 (-11)	1.53 ± 0.07(-10)	9.4 ± 0.4 (-11)	5.4 ± 0.2 (-11)	3 ± 1 (-12)	3.80 ± 0.09(-10)
	^{135}I	1.6 ± 0.3 (-10)	2.8 ± 0.7 (-10)	1.4 ± 0.2 (-10)	6 ± 2 (-11)	<4(-10)	6.4 ± 0.8 (-10)
04/01-04/15	^{131}I	5.2 ± 0.2 (-12)	1.46 ± 0.02(-11)	1.00 ± 0.01(-11)	6.9 ± 0.1 (-12)	3.1 ± 0.5 (-13)	3.70 ± 0.03(-11)
	^{133}I	3.1 ± 0.4 (-11)	4.4 ± 0.2 (-11)	4.8 ± 0.2 (-11)	2.5 ± 0.1 (-11)	<5(-12)	1.48 ± 0.05(-10)
05/09-05/20	^{131}I	1.7 ± 0.1 (-12)	1.40 ± 0.04(-11)	4.95 ± 0.06(-11)	2.22 ± 0.02(-11)	2.59 ± 0.08(-12)	9.00 ± 0.08(-11)
	^{133}I	<1(-11)	<3(-11)	<3(-12)	<6(-12)	<5(-12)	<4(-11)
05/20-06/03	^{131}I	2.9 ± 0.3 (-13)	2.7 ± 0.2 (-12)	1.27 ± 0.04(-11)	1.09 ± 0.04(-11)	7 ± 2 (-13)	2.73 ± 0.03(-11)
	^{133}I	<6(-13)	<6(-12)	<3(-12)	<2(-12)	<1(-11)	<1(-11)
06/03-06/17	^{131}I	9 ± 2 (-14)	c	c	c	1) 2.89 ± 0.07(-12) 2) <1(-13)	2.98 ± 0.07(-12)
	^{133}I	1.2 ± 0.2 (-12)	c	c	c	1) 3.2 ± 0.4 (-12) 2) <6(-13)	4.4 ± 0.4 (-12)
	^{135}I	<1(-11)	c	c	c	1) 1.2 ± 0.6 (-11) 2) <1(-11)	1.2 ± 0.6 (-11)

c. Species sampler not used.

Table B.6-14
UNIT NO. 2 TURBINE BUILDING EXHAUST IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	μci/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/14-03/21	^{131}I	<9(-14)	<4(-13)	<3(-13)	4.1 ± 0.3 (-12)	<2(-13)	4.5 ± 0.4 (-12)
	^{133}I	<3(-12)	<1(-12)	<2(-12)	7 ± 2 (-12)	<1(-12)	9 ± 2 (-12)
03/21-04/01	^{131}I	<1(-13)	<3(-13)	<3(-13)	1.8 ± 0.2 (-12)	<1(-13)	2.1 ± 0.3 (-12)
	^{133}I	<8(-13)	<2(-12)	<2(-12)	<5(-12)	<3(-12)	<9(-12)
04/01-04/15	^{131}I	<1(-13)	2.2 ± 0.4 (-13)	<1(-13)	8.2 ± 0.7 (-13)	<3(-13)	1.1 ± 0.1 (-12)
	^{133}I	<3(-12)	<2(-12)	<2(-12)	<3(-12)	<2(-11)	<7(-12)
04/15-04/22	^{131}I	<1(-13)	2.4 ± 0.8 (-13)	<3(-13)	6 ± 2 (-13)	<1(-13)	1.1 ± 0.3 (-12)
	^{133}I	<8(-12)	<1(-12)	<2(-12)	<5(-12)	<1(-11)	<8(-12)
04/22-04/27	^{131}I	<3(-13)	4 ± 1 (-13)	<2(-13)	8.8 ± 0.9 (-13)	1.4 ± 0.4 (-13)	1.5 ± 0.2 (-12)
	^{133}I	<3(-12)	<2(-12)	<8(-13)	<4(-12)	<7(-13)	<7(-12)
04/27-05/09	^{131}I	<8(-14)	<2(-13)	<5(-13)	2.8 ± 0.2 (-12)	<1(-13)	3.2 ± 0.3 (-12)
	^{133}I	<1(-12)	<3(-12)	<4(-12)	<3(-12)	<2(-12)	<1(-11)
05/09-05/20	^{131}I	<1(-13)	<9(-14)	<9(-14)	1.78 ± 0.09(-12)	<2(-13)	1.9 ± 0.1 (-12)
	^{133}I	<1(-12)	<1(-12)	<1(-12)	<1(-12)	<3(-12)	<3(-12)
05/20-06/03	^{131}I	<3(-14)	<7(-14)	<7(-14)	7 ± 1 (-13)	<8(-14)	8 ± 1 (-13)
	^{133}I	<3(-13)	<1(-12)	<3(-12)	<5(-12)	<2(-12)	<9(-12)
06/03-06/17	^{131}I	<7(-14)	c	c	c	1) 3.1 ± 0.6 (-13) 2) 9(-14)	3.1 ± 0.6 (-13)
	^{133}I	<8(-13)	c	c	c	1) <1(-12) 2) <1(-12)	<1(-12)
06/17-07/02	^{131}I	<4(-14)	c	c	c	1) 1.7 ± 0.3 (-13) 2) 6(-14)	1.7 ± 0.3 (-13)
	^{133}I	<9(-13)	c	c	c	1) <8(-13) 2) <2(-12)	a
07/02-07/15	^{131}I	<1(-13)	c	c	c	1) <7(-14) 2) <5(-14)	<7(-14)
	^{133}I	<1(-12)	c	c	c	1) <6(-13) 2) <5(-13)	<6(-13)

Table 8.6-14 (cont'd)
UNIT NO. 2 TURBINE BUILDING EXHAUST IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	uci/cc Particulate	CdI_2	IPH	AgX	Char	Total
07/22-08/11	^{131}I	<5(-14)	c	c	c	1) <4(-14) 2) <6(-14)	<4(-14)
	^{133}I	<5(-13)	c	c	c	1) <6(-13) 2) <1(-11)	<6(-13)
09/29-10/14	^{131}I	<1(-13)	c	c	c	1) 1.3 ± 0.1 (-12) 2)<2(-14)	a
	^{133}I	<2(-12)	c	c	c	1) 2.3 ± 0.9 (-12) 2)<2(-12)	a
10/14-10/21	^{131}I	c	c	c	c	1) 4.3 ± 0.6 (-13) 2) 3 ± 1 (-13)	7 ± 1 (-13)
	^{133}I	c	c	c	c	1) 3.2 ± 0.4 (-12) 2) <5(-12)	3.2 ± 0.4 (-12)
10/21-10/27	^{131}I	<2(-13)	<5(-13)	<3(-13)	<1(-12)	*	<2(-12)
	^{133}I	<2(-12)	<4(-12)	<2(-12)	<8(-12)	*	<1(-11)
10/27-11/09	^{131}I	<2(-13)	<1(-13)	<2(-13)	4.0 ± 0.9 (-13)	<1(-13)	6 ± 1 (-13)
	^{133}I	<2(-12)	<1(-12)	<4(-12)	<2(-12)	<2(-12)	<7(-12)
11/09-11/17	^{131}I	<4(-13)	<2(-13)	<1(-13)	<3(-13)	<3(-13)	<6(-13)
	^{133}I	<1(-12)	<1(-12)	<1(-12)	<1(-12)	<5(-12)	<3(-12)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

c. Species sampler not used.

Table B.6-15
UNIT NO. 2 TURBINE BUILDING CHARCOAL BED INLET IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µCi/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/14-03/21	^{131}I	5.25 ± 0.08(-11)	5.37 ± 0.08(-11)	4.5 ± 0.1 (-11)	5.17 ± 0.06(-11)	1.5 ± 0.2 (-12)	2.04 ± 0.02(-10)
	^{132}I		<9(-11)	1.1 ± 0.2 (-10)	2.8 ± 0.9 (-11)	<4(-11)	--
	^{133}I	1.60 ± 0.03(-10)	1.20 ± 0.03(-10)	1.24 ± 0.03(-10)	7.2 ± 0.2 (-11)	2.0 ± 0.7 (-12)	4.78 ± 0.06(-10)
	^{135}I	2.4 ± 0.5 (-10)	1.3 ± 0.2 (-10)	1.8 ± 0.2 (-10)	6.1 ± 0.8 (-11)	<3 (-11)	6.1 ± 0.6 (-10)
03/21-04/01	^{131}I	6.6 ± 0.1 (-12)	2.65 ± 0.07(-11)	1.57 ± 0.03(-11)	1.38 ± 0.06(-11)	4 ± 1 (-13)	6.3 ± 0.1 (-11)
	^{133}I	6.1 ± 0.1 (-11)	1.62 ± 0.06(-10)	8.9 ± 0.3 (-11)	5.0 ± 0.3 (-11)	<5 (-12)	3.62 ± 0.07(-10)
	^{135}I	<4(-10)	<6(-10)	<3(-10)	1.1 ± 0.4 (-10)	<4(-10)	6 ± 3 (-10)
04/01-04/15	^{131}I	1.36 ± 0.01(-11)	3.26 ± 0.03(-11)	1.33 ± 0.03(-11)	1.60 ± 0.04(-11)	5.8 ± 0.6 (-13)	7.61 ± 0.06(-11)
	^{133}I	1.81 ± 0.05(-10)	2.36 ± 0.06(-10)	7.5 ± 0.8 (-11)	9.3 ± 0.4 (-11)	<12(-11)	5.9 ± 0.1 (-10)
04/15-04/22	^{131}I	2.38 ± 0.05(-11)	2.83 ± 0.07(-11)	1.78 ± 0.06(-11)	1.63 ± 0.06(-11)	8.4 ± 0.7 (-13)	8.7 ± 0.1 (-11)
	^{133}I	2.3 ± 0.1 (-10)	2.2 ± 0.1 (-10)	1.22 ± 0.07(-10)	7.9 ± 0.6 (-11)	6 ± 2 (-12)	6.6 ± 0.2 (-10)
04/22-04/27	^{131}I	7.17 ± 0.08(-12)	1.10 ± 0.04(-11)	9.7 ± 0.3 (-12)	1.90 ± 0.03(-11)	8.7 ± 0.7 (-13)	4.78 ± 0.06(-11)
	^{133}I	9.6 ± 0.8 (-12)	1.2 ± 0.2 (-11)	9 ± 1 (-12)	1.14 ± 0.09(-11)	<8(-12)	4.2 ± 0.3 (-11)
04/27-05/09	^{131}I	4.98 ± 0.09(-12)	2.78 ± 0.07(-11)	1.03 ± 0.01(-10)	6.8 ± 0.1 (-11)	1.40 ± 0.03(-11)	2.18 ± 0.02(-10)
	^{133}I	<2(-12)	<3(-12)	<2(-12)	<5(-12)	<2(-12)	<1(-11)
05/09-05/20	^{131}I	1.6 ± 0.1 (-12)	1.23 ± 0.02(-11)	7.55 ± 0.05(-11)	2.07 ± 0.03(-11)	4.9 ± 0.2 (-12)	1.15 ± 0.01(-10)
	^{133}I	<2(-12)	<2(-12)	<2(-12)	<2(-12)	<2(-12)	<6(-12)
05/20-06/17	^{131}I	2.2 ± 0.3 (-13)	1.81 ± 0.07(-12)	4.7 ± 0.1 (-12)	1.26 ± 0.02(-11)	9.3 ± 0.6 (-13)	2.03 ± 0.02(-11)
	^{133}I	<2(-12)	<2(-12)	<2(-12)	<2(-12)	<2(-12)	<6(-12)
06/17-07/02	^{131}I	2.5 ± 0.3 (-13)	c	c	c	1) 1.0 ± 0.2 (-12) 2) <1(-13)	1.3 ± 0.2 (-12)
	^{133}I	<9(-12)	c	c	c	1) <2)-11) 2) <8(-12)	<2(-11)
10/21-10/27	^{131}I	3.6 ± 0.1 (-12)	1.9 ± 0.4 (-12)	1.8 ± 0.3 (-12)	4.1 ± 0.3 (-12)	*	1.14 ± 0.06(-11)
	^{133}I	5.3 ± 0.1 (-11)	1.7 ± 0.3 (-11)	1.8 ± 0.1 (-11)	3.5 ± 0.3 (-11)	*	1.23 ± 0.04(-10)
	^{135}I	1.4 ± 0.9 (-10)	<4(-10)	4 ± 1 (-11)	<5(-10)	*	a
10/27-11/09	^{131}I	5.4 ± 0.2 (-13)	c	c	c	1) 3.93 ± 0.08(-12) 2) <2(-13)	4.47 ± 0.08(-12)
	^{133}I	2.7 ± 0.3 (-12)	c	c	c	1) 5.1 ± 0.8 (-12) 2) <1(-12)	7.8 ± 0.9 (-12)

Table B.6-15 (cont'd)
UNIT NO. 2 TURBINE BUILDING CHARCOAL BED INLET IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
11/09-11/17	^{131}I	<4(-13)	6 ± 2 (-13)	2.1 ± 0.7 (-13)	3.0 ± 0.8 (-13)	<2(-13)	1.1 ± 0.2 (-12)
	^{133}I	<4(-12)	3.4 ± 0.5 (-13)	1.4 ± 0.4 (-12)	<3(-12)	<1(-12)	3 ± 2 (-12)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

c. Species sampler not used.

Table B.6-16
RAD WASTE IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/14-03/21	^{131}I	2.3 ± 0.1 (-12)	2.1 ± 0.1 (-12)	3.0 ± 0.1 (-12)	1.15 ± 0.02(-11)	<3(-13)	1.89 ± 0.03(-11)
	^{133}I	<2(-12)	<3(-12)	5.7 ± 0.5 (-12)	9.5 ± 0.9 (-12)	<7(-13)	1.8 ± 0.2 (-11)
	^{135}I	<3(-11)	<5(-11)	<1(-11)	<3(-11)	<3(-11)	<9(-11)
03/21-04/01	^{131}I	9.7 ± 0.8 (-13)	7.4 ± 0.5 (-13)	1.21 ± 0.07(-12)	3.1 ± 0.1 (-12)	<2(-13)	6.0 ± 0.2 (-12)
	^{133}I	<2(-12)	1.4 ± 0.5 (-12)	3.4 ± 0.6 (-12)	7 ± 1 (-12)	<1(-12)	1.3 ± 0.2 (-11)
04/01-04/15	^{131}I	2.53 ± 0.08(-12)	1.0 ± 0.1 (-12)	1.53 ± 0.08(-12)	2.4 ± 0.1 (-12)	<3(-13)	7.5 ± 0.2 (-12)
	^{133}I	<8(-12)	<7(-12)	1.0 ± 0.2 (-11)	1.4 ± 0.2 (-11)	<2(-11)	3.2 ± 0.6 (-11)
04/15-04/22	^{131}I	8.5 ± 0.2 (-12)	3.7 ± 0.1 (-11)	1.71 ± 0.07(-11)	6.3 ± 0.6 (-12)	1.8 ± 0.5 (-13)	6.9 ± 0.1 (-11)
	^{132}I	5.1 ± 0.9 (-11)	<2(-10)	<4(-11)	1.1 ± 0.3 (-10)	*	a
	^{133}I	9.6 ± 0.2 (-11)	3.3 ± 0.08(-10)	1.60 ± 0.05(-10)	4.5 ± 0.6 (-11)	<9(-13)	6.4 ± 0.1 (-10)
	^{135}I	1.24 ± 0.07(-10)	2.1 ± 0.3 (-10)	1.1 ± 0.3 (-10)	<6(-11)	<1(-11)	4.7 ± 0.5 (-10)
04/22-05/09	^{131}I	2.37 ± 0.09(-12)	1.05 ± 0.09(-12)	1.5 ± 0.2 (-12)	1.25 ± 0.04(-11)	6 ± 1 (-13)	1.80 ± 0.05(-11)
	^{133}I	<9(-12)	<1(-12)	<3(-12)	<4(-12)	<2 (-12)	<8(-12)
05/09-05/20	^{131}I	1.0 ± 0.1 (-12)	9.8 ± 0.8 (-13)	2.3 ± 0.1 (-12)	7.3 ± 0.2 (-12)	<2(-13)	1.16 ± 0.03(-11)
	^{133}I	<1(-11)	<4(-12)	<5(-12)	<3(-12)	<3(-12)	<1(-11)
05/20-06/03	^{131}I	2.97 ± 0.09(-12)	9 ± 1 (-13)	8 ± 2 (-13)	7.9 ± 0.6 (-12)	1.9 ± 0.3 (-12)	1.5 ± 0.7 (-11)
	^{133}I	<2(-12)	<4(-12)	<6(-12)	<3(-12)	<7(-12)	<1(-11)
06/03-06/17	^{131}I	2.4 ± 0.4 (-13)	4.2 ± 0.5 (-13)	3.2 ± 0.5 (-13)	1.27 ± 0.09(-12)	<2(-13)	2.3 ± 0.1 (-12)
	^{133}I	<1(-14)	<1(-12)	<1(-12)	<3(-12)	<3(-12)	<5(-12)
06/17-07/02	^{131}I	1.4 ± 0.6 (-13)	1.7 ± 0.4 (-13)	1.5 ± 0.3 (-13)	3.3 ± 0.4 (-13)	<1(-13)	7.9 ± 0.8 (-13)
07/02-07/15	^{131}I	2.1 ± 0.4 (-13)	<8(-14)	<1(-13)	1.6 ± 0.3 (-13)	<6(-14)	4.6 ± 0.8 (-13)
	^{133}I	<2(-12)	<2(-12)	<5(-13)	<6(-13)	<5(-13)	<3(-12)
07/22-08/11	^{131}I	<6(-14)	<7(-14)	<1(-13)	<1(-13)	<1(-13)	<3(-13)
	^{133}I	<1(-12)	<9(-13)	<3(-12)	<2(-12)	*	<1(-11)
10/21-10/27	^{131}I	1.06 ± 0.08(-12)	c	c	c	1) 6.2 ± 0.7 (-12) 2) <8(-13)	7.3 ± 0.7 (-12)
	^{133}I	4.7 ± 0.6 (-12)	c	c	c	1) 5.0 ± 0.5 (-11) 2) <3(-12)	5.5 ± 0.5 (-11)

Table B.6-16 (cont'd)
RAD WASTE IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
10/27-11/09	^{131}I	3.5 ± 0.8 (-13)	1.5 ± 0.4 (-13)	1.7 ± 0.5 (-13)	1.83 ± 0.07(-12)	2.2 ± 0.4 (-13)	2.7 ± 0.1 (-12)
	^{133}I	<2(-12)	<1(-12)	<1(-12)	<2(-12)	<9(-13)	<4(-12)
11/09-11/17	^{131}I	<3(-13)	<3(-13)	<2(-13)	<3(-13)	<2(-13)	<8(-13)
	^{133}I	<3(-12)	<1(-12)	<2(-12)	<1(-12)	<3(-12)	<4(-12)

* Radionuclide not measured.

a. Sum could not be determined due to large less-than values.

c. Species sampler not used.

Table B.6-17
UNIT NO. 1 REACTOR BUILDING TOTAL IODINE CONCENTRATIONS

		µci/cc			
Dates 1982	Nuclide	PF	Charcoal 1	Charcoal 2	Total
03/18-04/01	^{131}I	c	4.4 ± 0.1 (-13)	c	4.4 ± 0.1 (-13)
	^{133}I	c	3.6 ± 0.3 (-12)	c	3.6 ± 0.3 (-12)
04/01-04/15	^{131}I	<5(-14)	4.6 ± 0.2 (-13)	*	4.6 ± 0.2 (-13)
	^{133}I	<3(-12)	1.9 ± 0.5 (-12)	*	1.9 ± 0.5 (-12)
04/15-05/08	^{131}I	1.9 ± 0.2 (-14)	5.1 ± 0.2 (-13)	1.1 ± 0.2 (-14)	5.4 ± 0.2 (-13)
05/08-05/22	^{131}I	2.3 ± 3 (-14)	3.72 ± 0.07(-13)	1.05 ± 0.08(-13)	5.0 ± 0.1 (-13)
	^{133}I	2.6 ± 0.3 (-13)	1.8 ± 0.1 (-12)	3.4 ± 0.8 (-13)	2.4 ± 0.1 (-12)
	^{135}I	<6(-12)	3.7 ± 0.9 (-12)	<6(-12)	a
05/22-06/03	^{131}I	1.4 ± 0.4 (-14)	2.11 ± 0.09(-13)	6 ± 1 (-14)	2.9 ± 0.1 (-13)
	^{133}I	<6(-14)	5.5 ± 0.8 (-13)	<4(-13)	a
06/03-06/17	^{131}I	<2(-14)	2.4 ± 0.1 (-13)	<2(-14)	2.4 ± 0.1 (-13)
	^{133}I	<5(-13)	2.0 ± 0.2 (-12)	<3(-13)	2.0 ± 0.2 (-12)
06/17-07/02	^{131}I	1.5 ± 0.5 (-14)	1.08 ± 0.05(-13)	7.7 ± 0.2 (-14)	2.00 ± 0.07(-13)
	^{133}I	<1(-12)	3.6 ± 0.3 (-13)	1.4 ± 0.2 (-13)	5.0 ± 0.4 (-13)
	^{135}I	*	1.3 ± 0.6 (-12)	<9(-13)	a
07/02-07/22	^{131}I	<1(-13)	2.2 ± 0.1 (-14)	<6(-15)	a
	^{133}I	3.6 ± 0.6 (-13)	*	*	a
07/22-08/11	^{131}I	<7(-15)	9 ± 2 (-15)	<7(-15)	9 ± 2 (-15)
	^{133}I	<3(-13)	<2(-13)	<3(-13)	<2(-13)
10/10-10/21	^{131}I	2.9 ± 0.5 (-14)	9 ± 1 (-14)	<1(-14)	1.5 ± 0.1 (-13)
	^{133}I	8.1 ± 0.6 (-13)	2.6 ± 0.2 (-12)	9 ± 3 (-14)	3.5 ± 0.2 (-12)
	^{135}I	4 ± 1 (-12)	<2(-11)	<2(-12)	a

Table B.6-17 (cont'd)
UNIT NO. 1 REACTOR BUILDING TOTAL IODINE CONCENTRATIONS

		µci/cc			
Dates 1982	Nuclide	PF	Charcoal 1	Charcoal 2	Total
10/21-10/27	^{131}I	4 ± 2 (-14)	<5(-14)	*	a
	^{133}I	1.4 ± 0.3 (-12)	<3(-13)	*	a
10/27-11/09	^{131}I	1.1 ± 0.2 (-13)	7.9 ± 0.2 (-13)	*	a
	^{133}I	2.0 ± 0.4 (-12)	7.1 ± 0.2 (-12)	*	a
11/09-11/17	^{131}I	1.3 ± 0.2 (-13)	9.1 ± 0.3 (-13)	<2(-14)	1.04 ± 0.04(-12)
	^{133}I	2.1 ± 0.4 (-12)	7.3 ± 0.2 (-12)	<2(-13)	9.4 ± 0.5 (-12)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

c. Species sampler not used.

Table B.6-18
UNIT NO. 2 REACTOR BUILDING EXHAUST IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	μci/cc Particulate	CdI_2	IPH	AgX	Char	Total
03/18-04/01	^{131}I	3.02 ± 0.03(-11)	3.73 ± 0.06(-11)	5.29 ± 0.08(-11)	1.68 ± 0.03(-11)	8 ± 1 (-13)	1.38 ± 0.01(-10)
	^{132}I	3.5 ± 0.3 (-10)	3.0 ± 0.3 (-10)	2.2 ± 0.3 (-10)	5 ± 1 (-11)	<2(-11)	9.2 ± 0.5 (-10)
	^{133}I	2.4 ± 0.05(-10)	2.39 ± 0.08(-10)	2.93 ± 0.06(-10)	2.9 ± 0.1 (-11)	1.2 ± 0.6 (-12)	8.0 ± 0.1 (-10)
	^{135}I	5.3 ± 0.2 (-10)	4.3 ± 0.2 (-10)	4.9 ± 0.3 (-10)	3 ± 1 (-11)	<2 (-11)	1.48 ± 0.04(- 9)
04/01-04/15	^{131}I	2.08 ± 0.03(-11)	3.27 ± 0.06(-11)	1.72 ± 0.02(-11)	6.2 ± 0.2 (-12)	3.0 ± 0.5 (-13)	7.72 ± 0.07(-11)
	^{133}I	2.24 ± 0.05(-10)	2.10 ± 0.08(-10)	1.20 ± 0.05)-10)	<1(-11)	<5(-12)	5.6 ± 0.1 (-10)
04/15-04/22	^{131}I	4.90 ± 0.04(-11)	4.0 ± 0.1 (-11)	5.9 ± 0.1 (-11)	1.31 ± 0.06(-11)	4.2 ± 0.6 (-13)	1.62 ± 0.02(-10)
	^{132}I		1.3 ± 0.4 (-10)	2.1 ± 0.3 (-10)	<4(-11)	<5(-11)	a
	^{133}I	4.67 ± 0.05(-10)	3.0 ± 0.1 (-10)	5.2 ± 0.1 (-10)	1.04 ± 0.08(-10)	1.9 ± 0.3 (-12)	1.39 ± 0.02(- 9)
	^{135}I	7.6 ± 0.3 (-10)	4.4 ± 0.5 (-10)	5.9 ± 0.4 (-10)	<3(-11)	<1 (-11)	1.81 ± 0.07(- 9)
04/22-05/08	^{131}I	1.51 ± 0.01(-11)	2.49 ± 0.03(-11)	7.4 ± 0.2 (-11)	2.33 ± 0.06(-11)	7.8 ± 0.5 (-13)	1.38 ± 0.02(-10)
	^{132}I	*	<2(-11)	<4(-11)	1.0 ± 0.5 (-11)	*	a
	^{133}I	<2(-12)	<1(-12)	<3(-12)	<3(-12)	<1(-12)	<7(-12)
05/08-05/20	^{131}I	3.8 ± 0.1 (-12)	3.6 ± 0.4 (-11)	1.97 ± 0.2 (-10)	3.22 ± 0.03(-11)	1.17 ± 0.09(-12)	2.70 ± 0.05(-10)
	^{133}I	<2(-12)	<6(-13)	<2(-12)	<7(-13)	<2(-12)	<3(-12)
05/20-06/03	^{131}I	5.4 ± 0.7 (-13)	6.3 ± 0.3 (-12)	1.59 ± 0.07(-11)	7.0 ± 0.1 (-12)	8 ± 4 (-14)	2.9 ± 0.2 (-11)
	^{133}I	<5(-12)	<3(-12)	<4(-12)	<2(-12)	<3(-12)	<9(-12)
06/03-06/17	^{131}I	<3(-13)	8.5 ± 0.7 (-13)	1.03 ± 0.08(-12)	5.6 ± 0.6 (-13)	<9(-14)	2.4 ± 0.1 (-12)
	^{133}I	<8(-12)	<4(-12)	<3(-12)	<3(-12)	<3(-12)	<1(-11)
06/17-07/02	^{131}I	<1(-13)	2.8 ± 0.3 (-13)	5.5 ± 0.4 (-13)	4.1 ± 0.4 (-13)	<1(-13)	1.24 ± 0.06(-12)
	^{133}I	<7(-12)	<5(-13)	<8(-13)	<8(-13)	<2(-12)	<2(-12)
07/02-07/22	^{131}I	<3(-13)	1.7 ± 0.6 (-13)	<2(-13)	<4(-13)	<3(-13)	a
07/22-08/11	^{131}I	<9(-14)	<2(-13)	<1(-13)	<2(-13)	<1(-13)	<5(-13)
09/29-10/14	^{131}I	<2(-13)	c	c	c	1) 8.7 ± 0.2 (-12) 2) <4(-14)	8.7 ± 0.2 (-12)
	^{133}I	<2(-12)	c	c	c	1) 1.7 ± 0.2 (-11) 2) <1(-12)	1.7 ± 0.2 (-11)

Table B.6-18 (cont'd)
UNIT NO. 2 REACTOR BUILDING EXHAUST IODINE SPECIES CONCENTRATIONS

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
10/14-10/21	^{131}I	c	c	c	c	1) 6.5 ± 0.2 (-12) 2) <6(-14)	6.5 ± 0.2 (-12)
	^{133}I	c	c	c	c	1) 1.27 ± 0.02(-12) 2) <5(-13)	1.27 ± 0.02(-10)
	^{135}I	c	c	c	c	1) 3.1 ± 0.2 (-10) 2) <9(-12)	3.1 ± 0.2 (-10)
10/21-10/27	^{131}I	3.7 ± 0.2 (-12)	9.1 ± 0.5 (-12)	1.54 ± 0.08(-11)	4.5 ± 0.6 (-12)	*	3.3 ± 0.1 (-11)
	^{133}I	9.54 ± 0.07(-11)	8.7 ± 0.5 (-11)	1.22 ± 0.09(-10)	4.2 ± 0.3 (-11)	*	3.5 ± 0.1 (-10)
	^{135}I	2.68 ± 0.09(-10)	<4(-10)	1.6 ± 0.3 (-10)	7 ± 3 (-11)	*	a
10/27-11/09	^{131}I	<5(-13)	1.61 ± 0.09(-12)	1.8 ± 0.1 (-12)	1.00 ± 0.07(-12)	1.9 ± 0.6 (-13)	4.6 ± 0.2 (-12)
	^{133}I	<1(-11)	<5(-12)	<4(-12)	<7(-12)	<4(-12)	<2(-11)
11/09-11/17	^{131}I	<2(-13)	<3(-13)	3.0 ± 0.8 (-13)	2 ± 1 (-13)	<1(-13)	7 ± 2 (-13)
	^{133}I	<5(-13)	<2(-12)	<2(-12)	<6(-11)	<1(-12)	<7(-11)

* Radionuclide not measured.

a. Sum not calculated due to large less-than values.

c. Species sampler not used.

Table B.6-19
IODINE SPECIES CONCENTRATIONS FOR TURBINE BUILDING ROOM AIR, UNIT NO. 2 STANDBY GAS CHARCOAL CLEANUP INLET AND OUTLET, AND UNIT NO. 2 REACTOR VESSEL ATMOSPHERE

1982 Sample Dates	Nuclide	µci/cc Particulate	CdI_2	IPH	AgX	Char	Total
Unit No. 2 Primary Vessel Atmosphere							
04/27-	^{131}I	1.9 ± 0.1 (-10)	1.2 ± 0.1 (-9)	2.6 ± 0.1 (-9)	4.8 ± 0.1 (-10)	<7(-12)	4.5 ± 0.1 (-9)
	^{132}I	<4(-10)	1.5 ± 0.2 (-9)	5.3 ± 0.3 (-9)	<5(-10)	<5(-10)	7.3 ± 0.5 (-9)
	^{133}I	1.6 ± 0.6 (-11)	7 ± 1 (-11)	1.6 ± 0.2 (-10)	3.7 ± 0.8 (-11)	<7(-12)	2.8 ± 0.3 (-10)
Unit No. 2 Standby Gas Charcoal Bed Inlet							
04/23-	^{131}I	1.2 ± 0.1 (-10)	9 ± 2 (-11)	1.5 ± 0.2 (-10)	6.1 ± 0.7 (-10)	3.6 ± 0.2 (-10)	1.3 ± 0.1 (-9)
	^{133}I	7.8 ± 0.6 (-10)	2.8 ± 0.4 (-10)	7.8 ± 0.4 (-10)	2.3 ± 0.2 (-9)	7.9 ± 0.9 (-10)	4.9 ± 0.2 (-9)
	^{135}I	<1(-8)	<3(-9)	1.0 ± 0.1 (-9)	3 ± 2 (-9)	<5(-9)	a
Unit No. 2 Standby Gas Charcoal Bed Outlet							
04/23-	^{131}I	3 ± 1 (-11)	3 ± 1 (-11)	<2(-11)	<2(-11)	<3(-11)	8 ± 2 (-11)
	^{133}I	<2(-10)	<4(-11)	<2(-10)	<7(-11)	<9(-11)	<5(-10)
Turbine Building Room Air							
06/17-	^{131}I	1.0 ± 0.3 (-13)	c	c	c	1) 5.6 ± 0.4(-13) 2) <9(-14)	6.6 ± 0.5 (-13)
	^{133}I	1.6 ± 0.5 (-13)	c	c	c	1) 1.6 ± 0.3(-12) 2) <6(-12)	1.8 ± 0.3 (-12)

a. Sum not calculated due to large less-than values.

c. Species sampler not used.

Table B.6-20
GASEOUS ^{14}C SPECIES AND RELEASE RATES

Dates	U-1 Turbine Building		U-2 Turbine Building		U-1 Reactor Building		U-2 Reactor Building	
	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized
03/15 - 03/21	1.2 ± 0.5(-4)	a	2.4 ± 0.1(-2)	0	a,b	a,b	a,b	a,b
03/18 - 04/01	a,b	a,b	b	b	5 ± 2 (-4)	100	5 ± 2 (-4)	100
03/21 - 04/01	a	a	8 ± 1 (-3)	3	b	b	b	b
04/01 - 04/15	9 ± 4 (-5)	18	8 ± 2 (-4)	a	6 ± 2 (-4)	100	5 ± 1 (-4)	80
04/15 - 04/22	1.2 ± 0.5(-4)	93	9 ± 1 (-4)	30	b	b	8 ± 2 (-4)	69
04/15 - 05/08	a,b	a,b	b	b	1.0 ± 0.3(-3)	37	b	b
04/22 - 04/23	8 ± 3 (-5)	79	b	b	b	b	b	b
04/22 - 05/08	b	b	b	b	b	b	5 ± 2 (-4)	100
04/22 - 05/09	a,b	a,b	9 ± 1 (-4)	18	b	b	b	b
05/08 - 05/20	b	b	b	b	b	b	7 ± 2 (-4)	96
05/09 - 05/20	2.0 ± 0.8(-4)	100	1.4 ± 0.2(-3)	15	1.1 ± 0.3(-3)	95	b	b
05/20 - 06/03	1.4 ± 0.6(-4)	100	3.1 ± 0.9(-4)	64	8 ± 3 (-4)	100	4 ± 1 (-4)	85
06/03 - 06/17	1.6 ± 0.5(-4)	100	2.2 ± 0.7(-4)	50	7 ± 3 (-4)	84	1.0 ± 0.4(-4)	75
06/17 - 07/02	1.7 ± 0.5(-4)	95	1.9 ± 0.4(-4)	59	6 ± 2 (-4)	100	1.5 ± 0.6(-4)	100
07/02 - 07/15	8 ± 3 (-5)	45	1.8 ± 0.4(-4)	56	1.0 ± 0.2(-3)	79	3 ± 1 (-4)	100
07/22 - 08/06	b	b	b	b	b	b	2.1 ± 0.8(-4)	a
07/22 - 08/11	2 ± 1 (-5)	29	2.0 ± 0.8(-5)	24	6 ± 3 (-4)	a	a,b	a,b
09/29 - 10/14	1.9 ± 0.8(-5)	100	1.4 ± 0.4(-4)	20	b	b	2.3 ± 0.9(-4)	100
10/10 - 10/27	b	b	b	b	1.1 ± 0.4(-3)	73	b	b
10/14 - 10/27	4 ± 2 (-5)	87	8 ± 3 (-5)	58	b	b	6 ± 3 (-4)	98
10/27 - 11/09	3 ± 1 (-5)	93	6 ± 2 (-5)	77	1.0 ± 0.4(-3)	97	2.2 ± 0.9(-4)	66
11/09 - 11/17	2.1 ± 0.8(-5)	100	7 ± 3 (-5)	65	5 ± 2 (-4)	100	3.4 ± 0.5(-3)	59

Table 8.6-20 (cont'd)
GASEOUS ^{14}C SPECIES AND RELEASE RATES

Dates	Radwaste Building		Main Stack	
	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized
03/21 - 04/01	1.5 ± 0.6(-3)	a	a	a
04/01 - 04/15	1.9 ± 0.3(-3)	100	a	a
04/15 - 04/22	1.1 ± 0.2(-3)	100	a	a
04/19 - 04/23	b	b	2.8 ± 0.1 (-1)	97
04/22 - 04/23	2.6 ± 0.4(-3)	100	b	b
04/23 - 04/26	b	b	5.1 ± 0.3 (-1)	100
05/09 - 05/20	3.6 ± 0.6(-3)	100	a	a
06/07 - 06/16	a	a	2.8 ± 0.2 (-1)	93
06/16 - 07/02	a	a	3.3 ± 0.2 (-1)	100
07/02 - 07/15	a	a	4.3 ± 0.2 (-1)	67
07/22 - 08/11	a	a	1.0 ± 0.2 (-2)	65
09/29 - 10/14	a	a	8.6 ± 0.4 (-2)	100
10/14 - 10/27	a	a	2.9 ± 0.1 (-1)	100
10/27 - 11/09	a	a	3.16 ± 0.02(-1)	100
11/09 - 11/17	a	a	3.5 ± 0.2 (-1)	a

a. Not determined.

b. Determined for a different sampling period.

Table B.6-21
GASEOUS ^{3}H SPECIES AND RELEASE RATES

Dates	U-1 Turbine Building		U-2 Turbine Building		U-1 Reactor Building		U-2 Reactor Building	
	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized	(μCi/s)	%Oxidized
03/15 - 03/21	1.0 ± 0.1(-1)	97	9 ± 1 (-2)	83	a,b	a,b	a,b	a,b
03/18 - 04/01	a,b	a,b	b	b	1.8 ± 0.3(-1)	94	1.0 ± 0.2(-1)	99
03/21 - 04/01	4.6 ± 0.5(-2)	100	3.8 ± 0.6(-2)	99	b	b	b	b
04/01 - 04/15	7.7 ± 0.4(-2)	74	9.9 ± 0.5(-2)	98	1.3 ± 0.2(-1)	94	7 ± 1 (-2)	100
04/15 - 04/22	8.8 ± 0.9(-2)	95	1.8 ± 0.1(-1)	100	b	b	1.1 ± 0.2(-1)	100
04/15 - 05/08	a,b	a,b	b	b	1.0 ± 0.1(-1)	75	b	b
04/22 - 05/08	b	b	b	b	b	b	4.5 ± 0.7(-2)	92
04/22 - 05/09	a	a	8.7 ± 0.4(-2)	90	b	b	b	b
05/08 - 05/20	b	b	b	b	1.3 ± 0.2(-1)	98	4.7 ± 0.8(-2)	98
05/09 - 05/20	4.2 ± 0.4(-2)	100	4.5 ± 0.7(-2)	97	b	b	b	b
05/20 - 06/03	3.9 ± 0.4(-2)	99	4.3 ± 0.4(-2)	99	1.1 ± 0.2(-1)	77	2.4 ± 0.4(-2)	86
06/03 - 06/17	2.5 ± 0.4(-2)	100	2.0 ± 0.3(-2)	98	1.2 ± 0.2(-1)	88	1.9 ± 0.4(-2)	88
06/17 - 07/02	4.8 ± 0.5(-2)	97	4.1 ± 0.4(-2)	97	1.1 ± 0.2(-1)	72	7 ± 2 (-3)	100
07/02 - 07/15	5.6 ± 0.5(-2)	98	4.7 ± 0.5(-2)	98	1.4 ± 0.2(-1)	79	6 ± 3 (-3)	100
07/22 - 08/06	b	b	b	b	b	b	9 ± 3 (-3)	100
07/22 - 08/11	1.7 ± 0.7(-3)	97	1.0 ± 0.4(-3)	98	1.7 ± 0.5(-3)	78	a,b	a,b
09/29 - 10/14	8 ± 1 (-3)	78	1.7 ± 0.2(-2)	72	a, b	a, b	2.7 ± 0.5(-2)	63
10/10 - 10/27	b	b	b	b	1.0 ± 0.2(-1)	98	b	b
10/14 - 10/27	2.9 ± 0.3(-2)	96	5.0 ± 0.5(-2)	95	b	b	6.3 ± 0.9(-2)	97
10/27 - 11/09	4.8 ± 0.3(-2)	78	9.4 ± 0.5(-2)	94	3.9 ± 0.4(-1)	96	2.5 ± 0.5(-2)	96
11/09 - 11/17	3.3 ± 0.4(-2)	96	9.6 ± 0.5(-2)	99	3.9 ± 0.4(-1)	99	9 ± 4 (-3)	100

Table B.6-21 (cont'd)
GASEOUS ^{3}H SPECIES AND RELEASE RATES

Dates	Radwaste Building (μCi/s)	Radwaste Building %Oxidized	Main Stack (μCi/s)	Main Stack %Oxidized
03/15 - 03/21	1.4 ± 0.5(-2)	27	a	a
03/21 - 04/01	1.7 ± 0.7(-2)	100	a	a
04/01 - 04/15	2.6 ± 0.4(-2)	100	a	a
04/15 - 04/22	2.4 ± 0.5(-2)	100	a	a
04/19 - 04/23	b	b	1.9 ± 0.4(-1)	45
04/22 - 05/09	4.4 ± 0.7(-2)	100	b	b
04/23 - 04/26	b	b	3.9 ± 0.6(-1)	31
05/09 - 05/20	3.5 ± 0.6(-2)	100	a	a
05/20 - 06/03	6 ± 1 (-2)	100	a	a
06/03 - 06/17	4.1 ± 0.6(-2)	96	a	a
06/07 - 06/16	a	a	2.8 ± 0.3(-1)	29
06/16 - 07/02	a	a	7.6 ± 0.9(-2)	56
06/17 - 07/02	2.7 ± 0.4(-2)	94	b	b
07/02 - 07/15	a	a	6 ± 1 (-2)	55
07/22 - 08/11	a	a	3 ± 1 (-2)	100
09/29 - 10/14	a	a	2.2 ± 0.3(-1)	80
10/27 - 11/09	a	a	2.7 ± 0.3(-1)	36
11/09 - 11/17	a	a	1.4 ± 0.3(-1)	56

a. Not determined.

b. Determined for a different sampling period.

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13. ABSTRACT (200 words or less)

This report presents data obtained at Brunswick as part of the In-Plant Source Term Measurement Program in operating light water reactors (LWRs). The work was conducted for the Office of Nuclear Regulatory Research (RES) in support of the Meteorology and Effluent Treatment Branch (METB) of the Office of Nuclear Reactor Regulation (NRR). The primary objective of this progeam is to provide the Nuclear Regulatory Commission (NRC) with operational data that can be used in evaluation of plant designs for liquid and gaseous radwaste treatment systems. Data presented were obtained at the Brunswick Nuclear Generating Station, operated by Carolina Power and Light, located at Southport, North Carolina. In-plant measurements were conducted during the time period from March 1982 to November 1982. This plant is the sixth in a series of operating LWRs to be studied and the first boiling water reactor (BWR) in the series.

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