1. PURPOSE

To provide administrative requirements, guidelines, and describe responsibilities for the Fort St. Vrain (FSV) and Three Mile Island, Unit 2 (TMI-2) Independent Spent Fuel Storage Installation (ISFSI) Radiological Environmental Monitoring Programs (REMP) implemented to comply with FSV and TMI-2 ISFSI Technical Specification requirements.

2. SCOPE AND APPLICABILITY

This procedure is applicable to unplanned radioactive effluent releases from the FSV and TMI-2 Independent Spent Fuel Storage Installation (ISFSI). There are no planned radioactive effluent releases made pursuant to the FSV and TMI-2 ISFSI Technical Specifications and Safety Analysis Reports (SAR). 40 CFR 191.03, "Environmental Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-level and Transuranic Wastes," limits exposure to any member of the public in the general environment to 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other critical organ. 10 CFR 72.104, "Criteria for Radioactive Materials in Effluents and Direct Radiation from an ISFSI or MRS," limits the annual dose equivalent to any real individual who is located beyond the controlled area to 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other critical organ as a result of exposure to planned discharges of radioactive materials to the general environment or direct radiation from the ISFSI during normal operations and anticipated occurrences.

This procedure describes activities to be performed by facility staff and supporting radioanalytical laboratories. These activities may be performed by vendors approved in accordance with the respective facility Quality Program Plan.

3. RESPONSIBILITIES/PREREQUISITES

3.1 In the event services are provided by an approved vendor(s), the requirements of this procedure must be implemented through the applicable procurement/contract documents (such as, Statement of Work, Task Baseline Agreement, and so on).

4. INSTRUCTIONS

4.1 REMP Implementation

4.1.1 Facility Safety Officer (FSO): Ensure that the REMP is implemented in accordance with the respective ISFSI Technical Specifications and 10 CFR 72.44(d)(2).

4.2 FSV ISFSI Direct Radiation Monitoring

4.2.1 FSO: Locate and maintain thermoluminescent dosimetry (TLD) stations in accordance with Appendix A and Appendix D.

4.2.1.1 Code the environmental dosimetry station locations as I-1, I-2, I-3, and so on, beginning in a clockwise direction from the south location.

NOTE 1: *Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, and schedule conflict with unforeseen fuel handling operation, and other legitimate reasons.*

NOTE 2: *Actual changeout date should be within five working days of the first of the month.*

4.2.2 FSO: Ensure that sample control is maintained as follows.

4.2.2.1 Ensure dosimeters are inventoried upon receipt.

4.2.2.1.1 Resolve any discrepancies with the processing laboratory.

4.2.2.2 Inventory exchanged dosimeters prior to delivery to the processing laboratory.

4.2.2.2.1 If dosimeters are unobtainable due to equipment malfunction, make every effort to complete corrective actions before the end of the next monitoring period.

4.2.3 Ensure the appropriate shipping information if applicable (such as, tracking number) is communicated to the processing laboratory.

NOTE 1: *Dosimetry is exchanged on a quarterly basis with approximately one third of the dosimetry replaced each month.*

NOTE 2: *In the event elevated exposures are identified; Laboratory, Field, Mailing, and Background (Control Station) Control dosimeter results help determine whether the exposure is attributable to FSV or other sources (e.g., exposure in transit).*

4.2.3.1 Post and store annealed Field, Background Control, Laboratory Control, Field Control, and Mailing (Transit) Control dosimeters as follows:

4.2.3.1.1 Separate Mailing Control dosimeters upon receipt from the processor and return to the processor, along with exchanged Field dosimeters, for processing.

4.2.3.1.2 Keep Field Control dosimeters with the Field dosimeters until exchange is complete.

4.2.3.1.3 Separate Laboratory Control dosimeters and place them in a low background area, preferably a shielded container, until conclusion of the monitoring period.

4.2.3.1.4 When Field dosimeter exchange is complete, separate Field Control dosimeters and place them in a low background area, preferably a shielded container, until conclusion of the monitoring period.

4.2.3.1.4.1 Post Field dosimeters (including Background Control dosimeters) in the locations specified in Appendix A and Appendix D.

4.2.3.1.5 When the monitoring period has ended, return the Laboratory Control and Field Control dosimeters with the Field dosimeters and Background Control dosimeters to the processing laboratory.

4.2.4 Return exchanged dosimeters to the processing laboratory for processing in accordance with the laboratory's procedures.

4.2.5 Upon receipt of exposure results from the processing laboratory:

NOTE: *The processing laboratory normally determines total (ambient) exposure of the Control (Background, Field, and Laboratory) and Field dosimeters by subtracting the average of the Mailing Control dosimeter exposures from the measured exposure of each dosimeter. Additionally, the result is adjusted for dosimeter processor efficiency determined by the processing lab. Deviations are addressed per Step 4.1.7.2 below.*

4.2.5.1 Determine average daily exposure of the Background Control and Field dosimeters by dividing the total reported (ambient) exposure by the number of days the dosimeters were posted in the field.

4.2.5.2 Resolve discrepancies (e.g., elevated readings, indications of exposure in transit, lost data, etc.) with the processing laboratory.

4.3 TMI-2 ISFSI Airborne Radioactivity Monitoring

4.3.1 FSO: Ensure the following actions are performed:

4.3.1.1 Using a low volume air sampler, collect over a seven-day period an air particulate sample volume necessary to achieve the required LLD (nominally 5.5E5 liters).

4.3.1.2 Perform sampling monthly.

4.3.1.3 Locate the air sampler within the ISFSI perimeter fence.

4.3.2 After allowing for radon/thoron progeny decay, analyze the air filter sample for gross beta radioactivity using a minimum sample (gross) count time of 40 minutes and a minimum background count time of 20 minutes. A sample (gross) count time to background count time ratio of 2 should be maintained if longer count times are used. Determine net beta radioactivity and beta Minimum Detectable Activity (MDA) in accordance with Appendix C and Appendix F. Ensure the lower limit of detection (LLD) is no greater than 0.01 pCi/m^3 in accordance with Appendix B.

4.3.3 If gross beta radioactivity is greater than three standard deviations above the pre-operational baseline radioactivity (3E-14 uCi/cc per DOE/ID-12082 (98), perform a qualitative gamma isotopic analysis of the individual sample with a hand-held gamma spectrometer to identify contributing radionuclides.

4.3.4 If gross beta radioactivity is not greater than three standard deviations above the pre-operational baseline radioactivity, perform the following:

NOTE: *Appendix F may be used in lieu of a formal chain of custody form for maintaining control of the sample.*

4.3.4.1 Save the sample and perform a qualitative gamma isotopic analysis of an annual composite of the samples with a hand-held gamma spectrometer to identify contributing radionuclides. If Cs-137 is identified, quantitatively analyze the sample within sixty days of the end of the calendar year.

4.3.4.2 Ensure the quantitative LLD is no greater than 0.01 pCi/m^3.

4.3.4.3 Record radioactivity measurements in units of pCi/m^3.

4.4 TMI-2 ISFSI Direct Radiation Monitoring

4.4.1 FSO: Locate and maintain TLD stations around the TMI-2 ISFSI outer perimeter fence at the following locations in accordance with Appendix A, Appendix E, and MCP-2383.

A. Four TLDs each located east or west of the respective end shield walls

B. Two TLDs each located east and west along the centerline of the TMI-2 ISFSI

C. Eight TLDs each located north of the even-numbered HSMs

D. Eight TLDs each located south of the odd-numbered HSMs

E. Other TLDs in occupied buildings within 100 meters of the TMI-2 ISFSI or as directed by the FSO.

4.4.2 Change out dosimetry on a quarterly basis. Change out date should be within one week of the first day of the calendar quarter.

4.4.3 Ensure the minimum detectable dose demonstrated is no greater than 10 mrem.

4.4.4 Process the reported data:

A. Calculate the exposure duration in the unit of days

B. Multiply the reported exposure (mR) of each TLD location by the 1.03 mrem/mR unit conversion factor to calculate dose equivalent (mrem)

C. Divide the dose equivalents by the exposure duration to calculate the dose equivalent rates (mrem/day) for each TLD location

D. Calculate the mean and standard deviation of the dose equivalent rates

E. Using the guidance in Appendix G, determine the significance of the difference in the TLD responses from preoperational TLD responses.

4.5 TMI-2 ISFSI Surface Contamination Monitoring

4.5.1 Perform a contamination survey at the vent and purge ports of each dry shielded canister (DSC) in accordance with MCP-139, "Radiological Surveys." The survey frequency coincides with the scheduled Technical Specification surveillance requirements.

4.5.2 Perform a contamination survey at the drain port of each DSC in accordance with MCP-139. The survey frequency coincides with the scheduled Technical Specification surveillance requirements.

NOTE: *TPR-7066, Appendix A (survey report form) may be used in lieu of a formal chain of custody form for maintaining control of the samples.*

4.5.3 Analyze samples for beta radioactivity.

4.5.4 If beta radioactivity is greater than the MDA, as defined in Appendix C, then re-analyze the sample. If beta radioactivity remains greater than the MDA, then perform a qualitative gamma isotopic analysis of the sample with a hand-held gamma spectrometer to identify contributing radionuclides.

4.5.5 If beta radioactivity is not greater than the MDA, save the samples and perform a qualitative gamma isotopic qualitative analysis of an annual composite of the samples with a hand-held gamma spectrometer to identify contributing radionuclides. If Cs-137 is identified, quantitatively analyze for Cs-137 within sixty days of the end of the calendar year.

4.5.5.1 Ensure the quantitative LLD is no greater than 5 nCi for Cs-137 for a single sample geometry.

4.5.5.2 If during the qualitative analysis a Cs-137 gamma spectrum peak is identified, then perform a separate gamma isotopic quantitative analysis of each individual sample within the composite.

4.5.5.3 Record radioactivity measurements in units of nCi/sample.

4.6 Reporting

4.6.1 FSV ISFSI Manager/FSO: Verbally notify the DOE-ID Facility Director within one working day of discovery if:

A. A measured radiation level is determined, by using an analysis of variance and t-test performed in accordance with Appendix G, to be significantly higher than historical ambient radiation levels.

4.6.2 TMI-2 ISFSI Manager/FSO: Verbally notify the DOE-ID Facility Director within one working day of discovery of:

A. A confirmed Cs-137 surface radioactivity quantitative measurement

B. Confirmed radiation levels measured by TLDs that are significantly higher than historical radiation levels, as determined by an analysis of variance and t-test performed in accordance with Appendix G and not attributed to DSC transfer and loading operations

C. A confirmed airborne radioactivity quantitative measurement that exceeds 20 fCi/m^3 of Cs-137.

4.6.3 ISFSI Manager/FSO: Prepare a written report with the objective of submitting the report to the DOE-ID Facility Director for approval and subsequent submittal to the NRC within 30 days of discovery of any of the conditions specified in Steps 4.5.1 and 4.5.2 in accordance with 10 CFR 72.44(d)(3). Forward a copy of the report to the ISFSI Safety Review Committee for their review.

4.6.4 Prepare the annual REMP report to the DOE-ID Facility Director for approval and subsequent submittal to the NRC within 60 days of January 1 of each year in accordance with 10 CFR 72.44(d)(3). Forward a copy of the report to the ISFSI Safety Review Committee for their review.

4.6.5 Ensure the REMP report includes the following:

A. Summaries of airborne radioactivity (TMI-2 ISFSI only) and radiation exposures, including the quantity of each of the principal radionuclides either released to the environment in liquid and gaseous effluents, or detected in the environment during the previous calendar year of operation. If there were no liquid effluents, state so in the annual report

B. Interpretations, analyses, or trends of the results of the REMP for the reporting period including a comparison to preoperational monitoring data

C. An explanation for the loss or unavailability of monitoring data and impact on estimation of potential dose commitment to the general public

D. Quality control results including analytical intercomparison and intracomparison results as applicable

E. Any other information required to estimate the maximum potential dose commitment to the public resulting from effluent releases and direct radiation exposure

F. A description of changes in sampling locations that occur throughout the year

G. Delineation of sampling and monitoring locations in maps and written descriptions

H. All deviations from the established sampling schedule

I. Information regarding control stations for direct radiation and airborne radioactivity monitoring.

4.6.6 If specimens are unobtainable due to sampling equipment malfunction, make every effort to complete the corrective action before the end of the next sampling period.

5. RECORDS

Air Sample Sheets

Analytical Results

Dosimetry Results

Radiological Environmental Monitoring Program Report

NOTE: *MCP-557, "Records Management," the INL Records Schedule Matrix, and associated NRC record types list provide current information on the storage, turnover, and retention requirements for these records.*

6. DEFINITIONS

Qualitative analysis: an analysis to identify the radionuclides present.

Quantitative analysis: an analysis to determine the amount of radioactivity per surface area or volume sampled.

7. REFERENCES

10 CFR 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste"

40 CFR 191, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes"

EDF-9929, "A Proposed Gamma Spectroscopic Analysis Alternative for the TMI-2 ISFSI," January 11, 2011

Fort St. Vrain Independent Spent Fuel Storage Installation Safety Analysis Report

Fort St. Vrain Independent Spent Fuel Storage Installation Technical Specifications

MCP-139, "Radiological Surveys"

MCP-557, "Records Management"

MCP-2383, "Area Monitoring Dosimeters"

Site Environmental Report for Calendar Year 1998, DOE/ID-12082 (98), July 2000

Three Mile Island, Unit 2, Independent Spent Fuel Storage Installation Safety Analysis Report

Three Mile Island, Unit 2, Independent Spent Fuel Storage Installation Technical Specifications

TPR-7066, "Periodic HSM Monitoring, DSC Sampling, and Filter Housing Leak Tests"

8. APPENDIXES

Appendix A, FSV and TMI-2 ISFSI Radiological Environmental Monitoring Programs

Appendix B, Environmental Sample Analysis Lower Limit of Detection (LLD)

Appendix C, Other Useful Equations

Appendix D, FSV ISFSI Radiological Environmental Monitoring Locations

Appendix E, TMI-2 ISFSI Radiological Environmental Monitoring Locations

Appendix F, TMI-2 ISFSI Airborne Radioactivity Monitoring

Appendix G, Environmental Dosimetry Statistical Applications

Appendix H, Procedure Basis

Appendix A

FSV and TMI-2 ISFSI Radiological Environmental Monitoring Programs

Exposure Pathway and/or Sample	Number of Samples and Locations	Sampling Collection Frequency	Type and Frequency of Analysis
FSV ISFSI Direct Radiation	Sixteen stations with one or more dosimeters placed as a ring of stations around the controlled area boundary; others may be placed in special interest areas such as population centers, nearby residences, and schools as desired. One control station with one or more dosimeters at a location at least 10 miles from the FSV ISFSI.	Quarterly, with approximately one third of the dosimeters checked and replaced each month.	Gamma exposure rate on each dosimeter collected.
TMI-2 ISFSI Airborne Particulate	One sample inside the security perimeter fence in the most predominant wind direction from either the HSM being loaded or between the two rows of HSMs..	Seven day sample collected during each HSM loading or monthly when no HSMs are being loaded.	Beta radioactivity following filter change, qualitative gamma isotopic on annual composite. If beta activity is greater than three standard deviations above the preoperational baseline radioactivity, then perform qualitative gamma isotopic analysis on sample.

Exposure Pathway and/or Sample	Number of Samples and Locations	Sampling Collection Frequency	Type and Frequency of Analysis
TMI-2 ISFSI Surface Contamination	One sample at the vent, purge, and drain ports of each loaded HSM.	Monthly during the first year after DSC insertion, quarterly during the second through fifth years, and annually thereafter.	Beta radioactivity following each survey, qualitative gamma isotopic on annual composite. If beta activity is greater than three standard deviations above the preoperational baseline radioactivity, then perform qualitative gamma isotopic analysis on sample.
TMI-2 ISFSI Direct Radiation	Twenty-two stations, with one or more dosimeters, placed along the outer security perimeter fence. Others may be placed in interest areas within the 100 meter perimeter boundary as desired.	Quarterly	Gamma exposure rate on each dosimeter collected.

Appendix B

Environmental Sample Analysis Lower Limit of Detection (LLD)

The LLD is defined for purposes of these specifications as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. For a particular measurement system that may include radiochemical separation:

$$LLD = \left(2.71 + 4.66 \times B^{1/2}\right) / \left(T \times E \times V \times 2.22E6 \times Y \times e^{-\lambda\tau}\right)$$

where

- LLD is the "a priori" lower limit of detection as defined above as microcuries per unit mass or volume.
- $B^{1/2}$ is the standard deviation of the total background counts or of the total counts of a blank sample, as appropriate, as counts.
- T is the count time of background in minutes.
- E is the counting efficiency as counts per disintegration or counts per gamma for gamma spectroscopy.
- V is the sample size in units of mass or volume.
- 2.22E6 is the number of disintegrations per minute per microcurie, (dpm/μCi).
- Y is the fractional radiochemical yield when applicable and/or the gammas per disintegration when applied to gamma spectroscopy.
- λ is the radioactive decay constant for the particular radionuclide when radioactive decay correction is applicable.
- τ is the elapsed time between the sample collection and time of counting.

Values of E, V, Y, and τ, which are appropriate to the sample, should be used in the calculation.

It should be recognized that the LLD is defined as an "a priori" (before the fact) limit representing the capability of a measurement system and not as an "a posteriori" (after the fact) limit for a particular measurement. Analyses will be performed in such a manner that the stated LLD will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render the LLD unachievable. In such cases, the contributing factors will be identified and described in the Annual Radiological Environmental Monitoring Report.

Appendix C

Other Useful Equations

Minimum Detectable Activity (MDA)*

$$\text{MDA}\,(\text{dpm}) = \left(3 + 3.29\left[R_b \times T_{sb}\left\{1 + T_{sb}/T_b\right\}\right]^{1/2}\right)/\left(K \times T_{sb}\right)$$

where

Rb = background counting rate (cpm)

Tsb = sample (gross) counting time (minutes)

Tb = background counting time (minutes)

K = conversion factors (i.e., efficiency).

* Refer to NUREG 1507, pages 3 through 5 for derivation of equation.

Optimum Sample (Gross) & Background Counting Time Determination**

$$T = T_{sb} + T_b$$

$$T_{sb}/\left(T - T_{sb}\right) = \left(R_{sb}/R_b\right)^{1/2}$$

$$T_b = T - T_{sb}$$

where

T_{sb} = sample (gross) count time (minutes)

T = total counting time (minutes)

R_{sb} = sample (gross) counting rate (cpm)

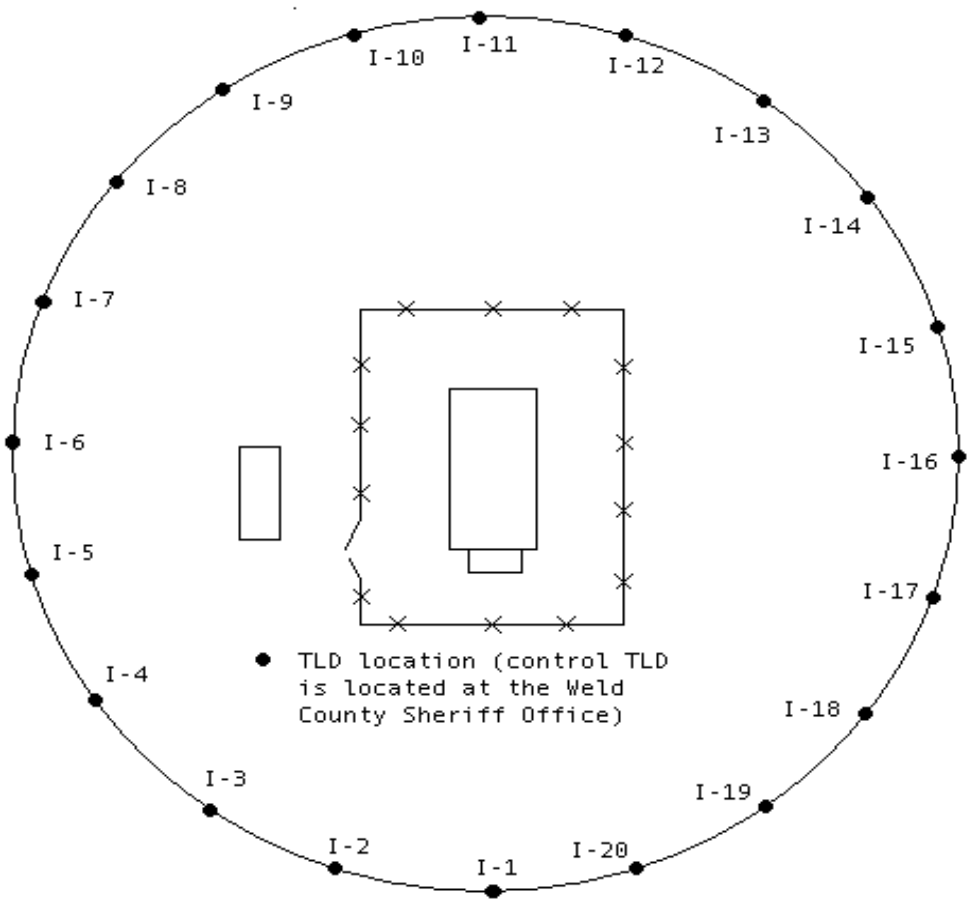
R_b = background counting rate (cpm)

T_b = background count time (minutes)

**Refer to H. Cember, “Introduction To Health Physics,” Third Edition, Page 410

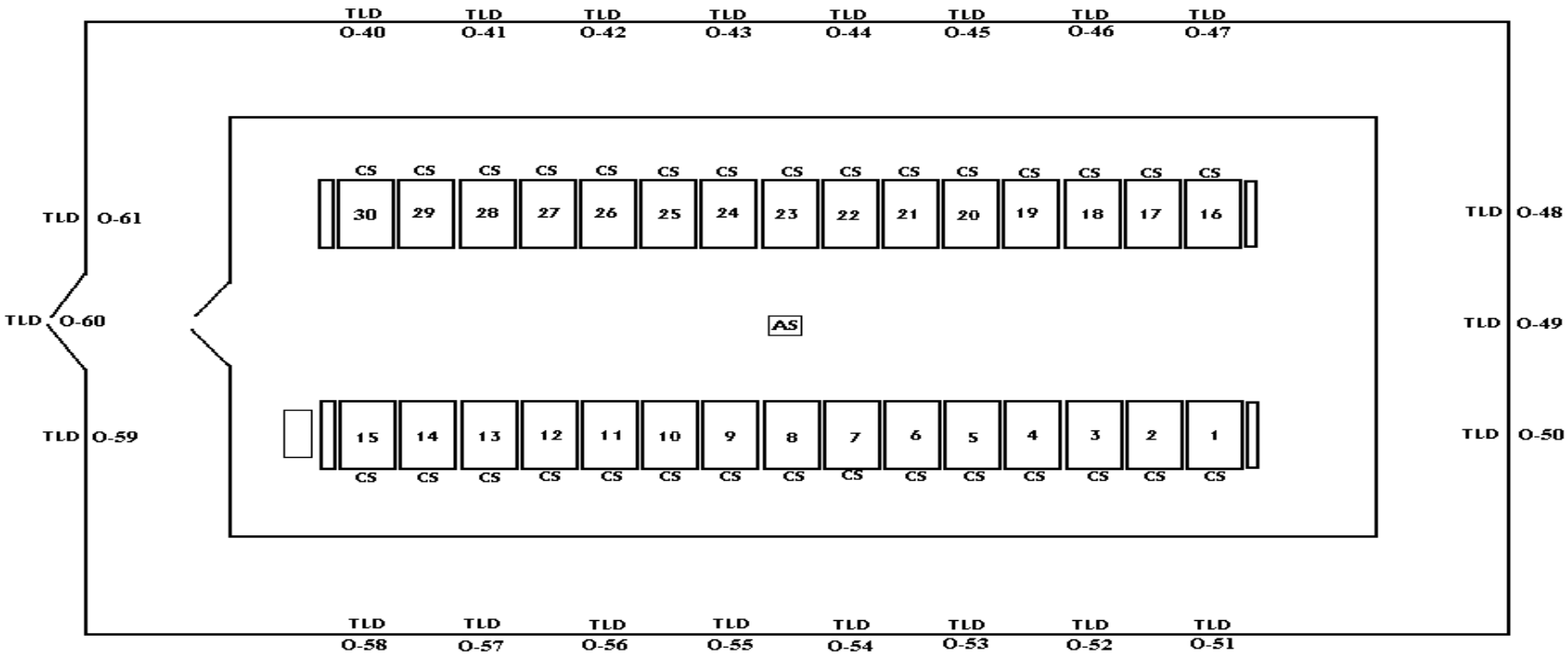
Appendix D

FSV ISFSI Radiological Environmental Monitoring Locations



Appendix E

TMI-2 ISFSI Radiological Environmental Monitoring Locations



TMI-2 ISFSI Radiological Environmental Monitoring Locations

(TLD - Direct Radiation Monitoring Location, AS - Air Sampling Location, CS - Contamination Survey Location)

Appendix F

TMI-2 ISFSI Airborne Radioactivity Monitoring

Airborne Radioactivity Sample Description

1. Date and time sample collection started: _____
2. Date and time sample collection completed: _____
3. Sampler model number and serial number: _____
4. Total sample collection time (minutes): _____
5. Sampler flow rate (liters/minute): _____
6. Total sample collection volume (liters): _____

Collected by: _____ Date: _____

Airborne Radioactivity Sample Analysis Results

NOTE: *Allow adequate time for radon/thoron progeny decay prior to sample analysis.*

1. Date and time sample counted: _____
2. Counter model number and serial number: _____
3. Counter beta counting efficiency (%): _____
4. Background counting time (minutes): _____
5. Background beta counting rate (cpm): _____
6. Sample (gross) counting time (minutes): _____
7. Sample (gross) beta counting rate (cpm): _____
8. Net beta counting rate (cpm): _____
9. Beta disintegration rate (dpm): _____
10. Beta radioactivity (uCi/cc): _____

$$\mu\text{Ci/cc} = \frac{\text{dpm}}{\left(2.22\text{E}+6\,\text{dpm}/\mu\text{Ci} \times 1.0\text{E}+3\text{cc}/\text{liter} \times \text{sample volume liters}\right)}$$

Performed by: _____ Date: _____

Airborne Radioactivity Sample Analysis Evaluation

1. Beta Minimum Detectable Activity (MDA)(uCi/cc): _____
2. Is the MDA less than 1E-14 uCi/cc? Yes _____ No _____
3. Pre-operational baseline beta radioactivity threshold: 4E-14 uCi/cc
4. Is the beta radioactivity greater than the threshold? Yes _____ No _____
5. If yes, has Cs-137 been detected (attach gamma results)? Yes _____ No _____

Reviewed by: _____ Date: _____

Appendix G

Environmental Dosimetry Statistical Applications

The analysis of variance (F-Test) and Student t-Test are two statistical tests used to determine the significance of the difference of any average dosimeter response(s) from historical ambient radiation levels. The two statistical tests may be performed using the Microsoft Excel *Analysis ToolPak*. The specific application of each test is described below. As required, install Excel *Analysis ToolPak* on your computer by selecting the Microsoft Excel Help function or (?) button, enter *Analysis ToolPak* in the search block, click on the start search button, select "Load the *Analysis ToolPak*," and follow the instructions.

1. Determine the mean and standard deviation of both Array/Group 1 and Array/Group 2.

<u>Analysis of Variance (F-Test Two Sample for Variances)</u>

1. In Excel, select: Tools or Data/Data Analysis/F-Test Two Sample for Variances. Click OK.

2. In the F-Test Two Sample for Variances dialog box perform the following:

    a. Left click in the input block of the Variable 1 Range and highlight the Array/Group of data points with the greatest standard deviation

    b. Left click in the input block of the Variable 2 Range and highlight the second array/group of data points

    c. Leave the Alpha Value at the 0.05 default. The 0.05 default is for a 95% Confidence Level

    d. Perform Output Options as follows:

        i. Select new worksheet. Left click in the input box to insert a descriptive title. Click OK

        OR

        ii. Select Output Range. Left click in the input box. Select the desired worksheet from the list located at the bottom of the Excel Spreadsheet. Highlight the area in the existing worksheet where F-Test output will be inserted. Click OK.

3. The F-Test p-value result (one-tailed probability) determines the equality of the variance between Array/Group 1 and Array/Group 2 at the 95% confidence level. If the p-value result is greater than 0.05, the variance between the Array/Group 1 and Array/Group 2 are "Equal". If the p-value result is less than 0.05, the variance between the Array/Group 1 and Array/Group 2 are "Not Equal".

Student t-Test

1. Based on the results of the F-Test, in Excel, select: Tools or Data/Data Analysis/select the appropriate Student t-Test as follows:

   a. t-Test: Two-Sample Assuming Equal Variances, Click OK.

   OR

   b. t-Test: Two Sample Assuming Unequal Variances. Click OK.

2. In the t-Test dialog box perform the following:

   a. Left click in the input block of the Variable 1 Range and highlight the array/group of data points with the greatest standard deviation

   b. Left click in the input block of the Variable 2 Range and highlight the second array/group of data points

   c. Leave the Alpha Value at the 0.05 default. The 0.05 default is for a 95% Confidence Level

   d. Perform Output Options as follows:

      i. Select new worksheet. Left click in the input box to insert a descriptive title. Click OK.

      OR

      ii. Select Output Range. Left click in the input box. Select the desired worksheet from the list located at the bottom of the Excel Spreadsheet. Highlight the area in the existing worksheet where t-Test output will be inserted. Click OK.

3. The t-Test p-value result (two-tailed probability) determines the equality of the Mean for Array/Group 1 and the Mean for Array/Group 2 at the 95% confidence level. If the p-value result is greater than 0.05, the variances between the Mean for Array/Group 1 and the Mean for Array/Group 2 are "Equal". If the p-value result is less than 0.05, the variances between the Mean for Array/Group 1 and the Mean for Array/Group 2 are "Not Equal".

Descriptive Statistics

1. If desired, perform the following steps for determining the Descriptive Statistics for the Arrays/Groups.

2. In Excel, select: Tools or Data/Data Analysis/Descriptive Statistics and click OK.

3. Perform the following in the Descriptive Statistics dialog box:

   a. Left click in the input range box

   b. Highlight the desired Array/Group

   c. Designate desired parameters, that is, grouping (columns or rows), labels, summary statistics, confidence level for the mean, Kth largest, and Kth smallest

   d. Perform Output Options as follows:

      i. Select new worksheet. Left click in the input box to insert a descriptive title. Click OK.

      OR

      ii. Select Output Range. Left click in the input box. Select the desired worksheet from the list located at the bottom of the Excel Spreadsheet. Highlight the area in the existing worksheet where Descriptive Statistics output will be inserted. Click OK**.**

   e. Repeat this section as needed.

<u>Final Report</u>

1. Evaluate findings and results. Generate a report or other document(s) as appropriate.

Appendix H

Procedure Basis

Step	Basis	Source	Citation
Entire procedure	Written procedures shall be established, implemented, and maintained for administrative controls.	FSV/TMI Technical Specification (TS)	5.4.1.a
Entire procedure	The INL meteorological and environmental surveillance programs will be continued through the life of the INL TMI-2 ISFSI. The ISFSI specific radiological environmental monitoring program will also continue through the life of the TMI-2 ISFSI.	TMI-2 SAR	7.6.1
Entire procedure	This program implements the requirements of 10 CFR 72.44(d).	FSV TS TMI-2 TS	AC 5.5.4 AC 5.5.3
Entire procedure	No planned radioactive effluents are released from the ISFSI during storage conditions. Environmental monitoring is performed to detect unplanned radioactive effluents from the ISFSI.	FSV SAR	7.7
Entire procedure	The results of this program are used to verify the effectiveness of measures applied to prevent the release of radioactive materials. Continuous operation of this program since 1990 has provided data that will be used as control values for statistical analysis of the results of the REMP.	FSV SAR	7.7
2.0	No real individual member of the public located beyond the controlled area boundary will receive a dose rate in excess of 25 mR/yr as required by 10 CFR 72.	FSV SAR TMI-2 SAR	7.5 7.4
4.1.1	The FSO will oversee the conduct of the REMP sampling.	FSV SAR	7.7.1
4.1.3	Radiological environmental monitoring dosimeters will be collected from the specific locations given in Table 7.7-1.	FSV SAR	7.7.1

Step	Basis	Source	Citation
4.1.6	Radiological environmental monitoring dosimeters will be processed pursuant to the requirements of Table 7.7-1 and the detection capabilities required by Table 7.7-2.	FSV SAR	7.7.2
4.3.1	TLDs will be used to record gamma radiation dose at appropriate intervals along the ISFSI perimeter fence.	TMI-2 SAR	7.6.1
4.5.4	A radiological environmental monitoring program report will be submitted within 60 days of January 1 of each year.	FSV SAR TMI-2 TS	7.7.3 AC 5.5.3
4.5.5	The annual report shall include summaries, interpretations, and analyses, quantities of materials released, and other information needed to estimate the maximum dose commitment to the public.	FSV SAR	7.7.3
4.5.5	Each report shall contain a map of monitoring locations.	FSV SAR	7.7.3
4.5.5	All changes in monitoring station locations and schedule shall be explained in the annual report.	FSV SAR	7.7.3
4.5.6	Deviations from the monitoring schedule if dosimeters are unavailable. Every effort will be made to complete corrective actions before the end of the monitoring period.	FSV SAR	7.7.3