



December 11, 2012

Document Control Desk
U.S. Nuclear Regulatory Commission
Two White Flint North
11545 Rockville Pike
(Mail Code: 03H8)
Rockville, Maryland 20852-2738

**RE: Ford Nuclear Reactor – Technical Specification Amendment Request
Final Status Survey – Survey Design Package for FNR Foundation Cavity
Docket 50-2 / License R-28**

Licensing Branch:

The University of Michigan (U-M) is requesting an amendment to the Ford Nuclear Reactor (FNR) Decommissioning Plan that was submitted to the Commission in a correspondence dated January 10, 2006. In accordance with the NRC correspondence dated October 25, 2012, Final Status Survey (FSS) Plan details are needed for special situation survey units that include subsurface areas.

Enclosed is the survey design package for the FNR foundation cavity located beneath the FNR southwest freight door. The survey approach and evaluation methods were developed by Ameriphysics and approved by the University of Michigan decommissioning staff.

In addition to conducting beta and gamma scan surveys of all accessible surfaces and collecting static measurements and smears at each sample location, soil samples will be collected in the soil areas within the cavity for additional analyses. These soil samples will be shared with the NRC for confirmatory analyses.

Please do not hesitate to contact me at OSEH / Radiation Safety Service [(734) 647-2251] should you have any questions or comments regarding the enclosed Final Status Survey design package for the foundation cavity beneath the southwest freight door.

Sincerely,

Mark L. Driscoll
Director / Radiation Safety Officer
Radiation Safety Service / OSEH

FSME20)
FSME

MLD/TGA/ml
NRCFNRR-28AmendmentD&DCavitySurveyDesignPkg12-11-12

cc: Terry Alexander, Executive Director, OSEH
Robert Blackburn, Manager, Laboratory Operations, MMPP
Volker Sick, Associate Vice President, OVPR / Chair FNR-DRC
Theodore Smith, FNR Project Manager, NRC Headquarters (Mailstop T-8F5)
Jeremy Tapp, Health Physicist, NRC Region III
FNR Decommissioning File

Ameriphysics LLC.
University of Michigan Ford Nuclear Reactor Bldg.
Final Status Survey Package

Building: <u>FNR</u>	Survey Unit: <u>Misc-2</u>	Page ___ of ___
Description: PML/FNR Cavity Below Roll-Up Door – All Surfaces		
Classification: <input checked="" type="checkbox"/> Class 1 - Impacted <input type="checkbox"/> Class 2 - Impacted <input type="checkbox"/> Class 3 - Impacted		

Applicable Nuclides of Concern:				
Nuclide	<input checked="" type="checkbox"/> ⁶⁰ Co	<input checked="" type="checkbox"/> ^{108m} Ag	<input checked="" type="checkbox"/> ^{110m} Ag	<input checked="" type="checkbox"/> ¹³⁷ Cs
Gross Beta DCGL_w (dpm/100cm²)	5,125			

Applicable Survey Unit Surfaces:	% of Surface Requiring Scan Surveys		
<input checked="" type="checkbox"/> Floors	<input type="checkbox"/> 10%	<input type="checkbox"/> 25%	<input checked="" type="checkbox"/> 100%
<input checked="" type="checkbox"/> Lower walls	<input type="checkbox"/> 10%	<input type="checkbox"/> 25%	<input checked="" type="checkbox"/> 100%
<input checked="" type="checkbox"/> Upper Walls	<input type="checkbox"/> 10%	<input type="checkbox"/> 25%	<input checked="" type="checkbox"/> 100%
<input checked="" type="checkbox"/> Ceiling	<input type="checkbox"/> 10%	<input type="checkbox"/> 25%	<input checked="" type="checkbox"/> 100%

Required Survey Instrumentation	Measurement Type	Static Count Time	Scan Rate
<input checked="" type="checkbox"/> Ludlum 2360/43-93 or equivalent	Beta	60 Seconds	2 inches/sec.
<input checked="" type="checkbox"/> Ludlum 2221/43-37 or equivalent	Beta	N/A	2 inches/sec.
<input checked="" type="checkbox"/> Ludlum 2221/44-10 or equivalent	Gamma	N/A	0.5 meters/sec.
<input checked="" type="checkbox"/> An automated smear counter shall be used to analyze for Gross beta using Tc-99 efficiency			

Completed Package
Reviewed By:

Printed Name/Signature

Date: _____

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University of Michigan Ford Nuclear Reactor Bldg.
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General Survey Instructions:

1. The established number of static measurement locations needed for the statistical evaluation of this survey unit is **17**.
2. For Class 1 and 2 survey units, the locations are determined by using a random start point and a systematic spacing from this point. For Class 3 survey units, these locations are selected by using randomly generated coordinates to determine sample locations. Due to these methods, the actual number of locations may vary. In this case, collect the actual locations provided on the survey map whether this number is greater than or less than 17.
3. Class 1 areas require a 100% beta and gamma scan surveys of all accessible surfaces. For Class 2 and 3 survey units, perform scan surveys of the required surface area at the prescribed scan rates. The areas scan surveyed should be chosen on surfaces with the highest potential to contain residual activity (e.g., potential spill locations, areas of high foot traffic, areas not normally cleaned during housekeeping activities, etc.). If there are no areas of high potential, perform scan surveys at the prescribed coverage on all applicable surfaces. All scan surveys shall be documented on the survey maps and data sheets. All scan survey locations should be shown so that they are understandable to the reviewer.
4. Locate and mark the required static measurements locations using the provided survey map(s). Survey Maps have been provided with the required static measurement locations. Sufficient detail has been provided on these maps to measure and locate all of these locations.
5. Collect a static measurement and smear at each sample location. Document the results on the associated data results sheets. Additional static measurements may be taken in suspect areas at the discretion of the Project Manager or survey technician. However, these additional locations are not included in the analysis of the statistical sample set.
6. Notify the Ameriphysics Project Manager or designee if any static measurement or applicable removable contamination measurements exceeds the applicable investigation level.

Investigation Levels

Survey Unit Classification	Flag Direct Measurement or Sample Result When:	Flag Beta Scanning Measurement Result When:	Flag Removable Measurement Result When:
Class 1	> DCGL	> DCGL	> 500 dpm/100 cm ²
Class 2	> 75% DCGL	> 75% DCGL	> 500 dpm/100 cm ²
Class 3	> 75% DCGL	> 75% DCGL	> 500 dpm/100 cm ²

6. Ensure that all package information is completed and signed prior to turning in this Survey Package to the Project Manager or designee for review.

Special Survey Instructions:

Two Soil Samples will be collected in the soil areas in the cavity. A gamma scan survey will also be performed using a 2x2 Sodium Iodide detector using a scan rate of 0.25 meters/second or less.

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Location Code Description	
A unique location code shall be assigned to each individual survey location to ensure proper data management of the survey results. The following format shall be used to ensure consistency throughout the final status survey process:	
BBB-RRRR-SS-M-LLL	
Where:	
BBB	= Building or area code. This field represents the facility area. This will be the building number or an assigned area number. (3 characters)
RRRR	= Survey unit ID code. Survey Unit ID. (3 to 4 characters)
SS	= Structural surface code. This field represents the structural surface such as floor, wall, ceiling, etc. and the surface division code. For example, if a room has a very large floor area it may be divided into two or more divisions and each section would be assigned unique codes such as F1, F2 and so on. Walls may be divided on a frequent basis. If only one surface area is identified for a particular survey area, then the default number will be "1". (e.g. W1, F1, etc.) (2 characters)
M	= Structural material code. This field represents the type of structural material on which a particular measurement is taken. This field is usually used to for data sorting and analysis. The Project Manager will provide applicable codes. The default character shall be "M". (1 Character)
LLL	= Numerical identification number. This field represents the survey point assigned numerical identifier. The field "001" means survey point location number 1. Numerical Identifiers shall not be duplicated within the same survey unit. (3-characters)

Prepared By:

T. Pratt [Signature]
 Printed Name/Signature

Date:

12/7/12

Ameriphysics LLC
Random Sample Start Location
and Sample Spacing Worksheet

Building: FNR Survey Unit: Misc-2 Class: 1

Survey Unit Description: PML Cavity

Survey Unit Area: 49.00 m² 527.2 ft²
 Floor Area: 15.00 m² 161.4 ft²
 Number of Samples used for Calc: 17

X-axis dimension: 19.19 m 63.0 ft X Rand:¹ 0.45331129
 Y-axis dimension: 8.63 m 28.3 ft Y Rand:¹ 0.68854209

X-Axis Start Location:² 8.70 m 28.5 ft
 Y-Axis Start Location:² 5.94 m 19.5 ft

Sampling Spacing: 1.82 m 5.99 ft Use 1.5m

Replacement Sample Locations³

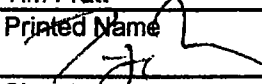
Survey Location	Random Number Generation*		X-Coordinate Location	Y-Coordinate Location
	X Coordinate	Y Coordinate		

Note 1: Random Numbers between 0 and 1 were generated using the =RAND() Function of MS Excel. The value of the calculation is saved using the F9 Function rather than the formula to prevent recalculation during any document edit.

Note 2: X-Axis and Y-Axis start locations were calculated by multiplying the appropriate dimension by the corresponding random number.

Note 3: Some randomly chosen survey locations do not fall on surface that can be surveyed. In this case, new simple random coordinates are generated to replace the original coordinates.

Calculations Performed By:

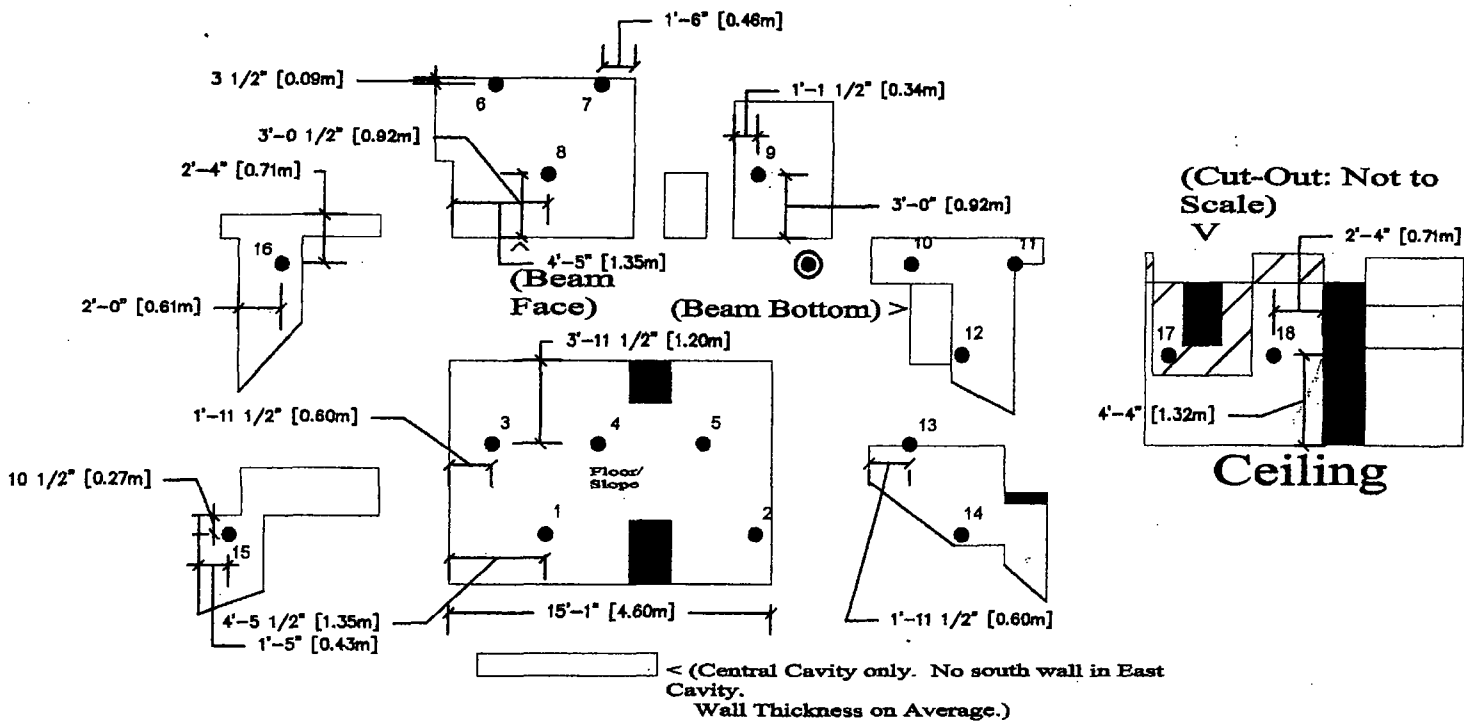
Tim Pratt
 Printed Name _____

 Signature _____ Date 12/6/2012



Ford Nuclear Reactor Map
Final Status Survey

FNR Miscellaneous Survey Unit Misc.- 2
Class: 1
FNR/PML Cavity (Main Cavity and East Cavity) on 1st Floor
Surface Area: 49 sq. m

- - Opening/Inaccessible
- - Sides of Cut-out



- ⊙ Random Start Location
- Sample Locations
- Typical Spacing - 1.5 m

SURVEY MAP

BUILDING: FNR

SURVEY UNIT NUMBER: Misc-2

PAGE OF

CLASS: 1

SURVEY TYPE (CHECK ONE):

Characterization Survey

Final Status Survey

COMMENTS:

SURVEY COMPLETED BY:

DATE COMPLETED:

PROJECT MANAGER REVIEW:

DATE: