



October 18, 2005

Mr. Robert Schaaf
Sr. Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop O-11F1
Washington, DC 20555

Palisades Nuclear Plant, Response to Supplemental Questions Concerning Radioactive Solid Waste Management

Dear Mr. Schaaf:

Enclosed, please find the supplemental information regarding Palisades Nuclear Generating Plant radioactive solid waste management. This information is in response to your supplemental questions in a September 9, 2005 e-mail and subsequent September 12, 2005 conference call. Enclosure 1 and Table 1 provides responses and information to address your inquiries.

Please contact me at 763-295-1309 should you need further clarification.

Sincerely,

James Holthaus
Environmental Project Manager
Nuclear Management Company, LLC
Palisades Nuclear Plant

Enclosure 1

NRC Question 1a:

1. Attachment 4 of the Annual Radioactive Effluent Release and Waste Disposal Reports (RERWDRs) summarizes all solid radwaste classification, sources, volume shipped, and curie and nuclide content.

a. Please clarify whether this table indicates waste shipped from a third party processing center to a disposal facility or shipped from the Palisades site.

NMC Response to NRC Question 1a:

The tables contained in Attachment 4 of the RERWDRs for 2000-2004 summarize waste shipped from the Palisades site for treatment or processing. These totals may include waste sent out for volume reduction; thereby the final waste volume will be lower and may not be realized until following years.

NRC Question 1b:

1b. Provide the volumes listed in Attachment 4 of the RERWDRs are for waste shipped from a third party to a disposal facility, what were the volumes shipped from Palisades in 2000, 2001, 2002, 2003 and 2004? Provide tables similar to those given in Attachment 4 of the RERWDs for the waste shipped from the site in each year.

NMC Response to NRC question 1b:

Attachment 4 of the RERWDRs summarizes waste shipped from the Palisades site. Table 1 (see attached) identifies the number of shipments of solid waste from the Palisades site, waste class (AS, AU, B, C), location of shipments, total volumes shipped, total curie counts and principal radionuclide compositions for the years 2000, 2001, 2002, 2003 and 2004.

NRC Question 2:

2. How many waste shipments were made from the Palisades site in 2000, 2001, 2002, 2003 and 2004 and where were the shipments sent?

NMC Response to NRC Question 2:

During the period 2000-2004, Palisades made an average of 16 shipments of LLW per year. Table 1(see attached) provides the number of waste shipments made per year from the Palisades site and locations of where the shipments were sent.

NRC Question 4: (No Question 3 was provided)

4. What were the quantities (in terms of volume and curie content) of LLW by class (A, B, and C) and mixed LLW generated during 2000, 2001, 2002, 2003, and 2004? What were the inventories stored on site at the end of each year? Where were they stored?

NMC Response to NRC Question 4:

The quantities of LLW generated in the years 2000-2004 are as follows (after volume reduction):

Year	Amount Generated	Year-end Estimate Stored On-Site₂	Storage Location
2000	2834 ft ³ total	7106 ft ³	East Radwaste Storage Building
2001	3185 ft ³ total	3357 ft ³	East Radwaste Storage Building
2002₁	Class A: 1784.7 ft ³ Class B: <u>145.8 ft³</u> 1930.5 ft ³	2860 ft ³	East Radwaste Storage Building
2003₁	Class A: 1214.0 ft ³ Class C: <u>180.1 ft³</u> 1394.1 ft ³	3230.2 ft ³	East Radwaste Storage Building
2004₁	Class A: 1400 ft ³ Class B: <u>100 ft³</u> 1500 ft ³	4234 ft ³	East Radwaste Storage Building

₁ From Michigan Department of Environmental Quality Annual Low-Level Radioactive Waste Management Surveys.

₂ Year-end estimates include 1900 ft³ of containment building concrete material (D-block) removed during steam generator replacement, currently stored adjacent to the Steam Generator Storage Building. This number was not accounted for in Palisades' Annual Low-Level Radioactive Waste Management Surveys to the Michigan Department of Environmental Quality, 2000-2004. The numbers provided here serve as an update to Question 14 A in Palisades' Annual Low-Level Radioactive Waste Management Surveys to the Michigan Department of Environmental Quality, 2000-2004.

Curie content of LLW generated is usually calculated during shipping; therefore, there is currently no estimate of the curie content of waste generated for each year.

Yearly volume estimates of LLW generated do not include 20,000 ft³ designated for disposal of old steam generators, currently stored on-site in the Steam Generator Storage Building. Palisades' old steam generators (2) are designated as decommissioning disposal items.

No mixed waste was stored on the Palisades site from 2000-2004, nor is any stored at present. However, Palisades is permitted per the site Treatment Storage and Disposal (TSD) permit to store up to two 55-gallon drums of lead waste from plant operations (i.e. lead paint removal). The Low Level Mixed Waste Unit is located in the East Radwaste Storage Building, inside the Palisades owner controlled area.

Table 1**January-December 2004**

Waste Class	Source of Waste	Container Type	Number of Shipments	Shipping Location	Total Volume Released(ft ³) ₁	Total Curies (Ci) ₁	Principal Radionuclides ₁
AS	Evaporator Bottoms	High Integrity Container	3	Barnwell	307.2	2.81	Co-60, Cs-137, Sb-125, Ni-63, Cs-134, Mn-54, Co-58, Fe-55, Ag-110m, Ru-106
B	Other Reformed Residue (Resin)	High Integrity Container	1	Duratek	2.7	3.246	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Cs-134, Zn-65, H-3
C	Other Reformed Residue (Resin)	High Integrity Container	1	Studsvik	42.5	41.2	Co-60, Ag-110m, Mn-54, Cs-137, Cs-134, Ni-63, Fe-55, H-3
AU	Dry Active Waste	Low Specific Activity	6 2 1	Duratek RACE Studsvik	143.8	0.606	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Ru-106, Pu-241
TOTAL			14		496.2	47.862	

₁ Data obtained from 2004 Radioactive Effluent Release Report, Attachment 4

January-December 2003

Waste Class	Source of Waste	Container Type	Number of Shipments	Shipping Location	Total Volume Released(ft ³) ₁	Total Curies (Ci) ₁	Principal Radionuclides ₁
AS	Evaporated Bottoms	High Integrity Container	1	Barnwell	102.4	1.877	Co-60, Cs-137, Sb-125, Ni-63, Cs-134, Mn-54, Co-58, Fe-55, Ag-110m, Ru-106
AS	Dry Active Waste	High Integrity Container	1	Barnwell	194.1	0.726	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55
C	Resin	High Integrity Container	1	Studsvik	9.3	6.23	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Cs-134, Zn-65, H-3
C	Filters	High Integrity Container	1	Barnwell	170.8	3.287	Co-60, Ag-110m, Mn-54, Cs-137, Cs-134, Ni-63, Fe-55, H-3
AU	Dry Active Waste	LSA	2 1 7	RACE Duratek Studsvik	557.4	0.37	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Ru-106, Pu-241
TOTAL			14		1034	12.49	

₁ Data obtained from 2003 Radioactive Effluent Release Report, Attachment 4

Table 1 continued**January-December 2002**

Waste Class	Source of Waste	Container Type	Number of Shipments	Shipping Location	Total Volume Released(ft ³) ₁	Total Curies (Ci) ₁	Principal Radionuclides ₁
AS	Evaporator Bottoms	High Integrity Container	2	Barnwell	256	1.493	Co-60, Cs-137, Sb-125, Ni-63, Cs-134, Mn-54, Co-58, Fe-55
AS	Dry Active Waste	High Integrity Container	1	Barnwell	194.1	0.555	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Ru-106, Pu-241
B	Resin	High Integrity Container	1	Barnwell	145.8	75.1	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Cs-134, Zn-65, H-3
AU	Dry Active Waste	Low Specific Activity	2 2 1 1	US Ecology Duratek Barnwell RACE	1334.6	0.291	Co-60, Cs-137, Sb-125, Ni-63, Sr-90, Mn-54, Co-58, Fe-55, Ru-106, Pu-241
TOTAL			10		1930.5	77.439	

₁ Data obtained from 2002 Radioactive Effluent Release Report, Attachment 4

January- December 2001

Waste Class	Source of Waste	Container Type	Number of Shipments	Shipping Location	Total Volume Released(ft ³) ₁	Total Curies (Ci) ₁	Principal Radionuclides ₁
AS	Dry Active Waste	High Integrity Container	1	Barnwell	194.1	1.05	Co-60, Cs-137, Co-58, Cs-134, Mn-54, Fe-55, Nb-95, Ag-100m, Zr-95, Sb-125, Ni-63
B	Dry Active Waste	High Integrity Container	1	Barnwell	195.7	0.63	Same as above
AU	Dry Active Waste	LSA	17 4	Duratek US Ecology	1638.8	0.47	Same as above
AS	Evaporated Bottoms	High Integrity Container	3	Barnwell	256	4.25	Co-60, Cs-137, Co-58, Cs-134, Mn-54, Fe-55, Zn-65, Sb-125, Ni-63, Ag-110m
TOTAL			26		2284.6	6.4	

₁ Data Obtained from 2001 Radioactive Effluent Release Report, Attachment 4

Table 1 continued**January-December 2000**

Waste Class	Source of Waste	Container Type	Number of Shipments	Shipping Location	Total Volume Released(ft³)₁	Total Curies (Ci)₁	Principal Radionuclides₁
AS	Dry Active Waste	High Integrity Container	3	Barnwell	362.1	1.4	Co-60, Cs-137, Co-58, Cs-134, Mn-54, Fe-55, Cr-51, Ag-110m, Zr-95, Ce-144, Ni-63
AU	Dry Active Waste	LSA	11	Duratek	1313.7	0.3	Same as above
AS	Evaporated Bottoms	High Integrity Container	1	Barnwell	102.4	0.5	Co-60, Cs-137, Co-58, Cs-134, Mn-54, Fe-55
AS	Resins	High Integrity Container	1	Barnwell	132.4	3.3	Cs-137, H-3, Cs-134
C	Resins	High Integrity Container	1	Barnwell	132.4	188	Cs-137, Co-60
C	Irradiated Hardware	Steel Liner	1	Barnwell	14.6	8360	Co-60, Co-58, Mn-54, Fe-55, Ni-63, Ni-59
TOTAL			18		2057.6	8553.5	

₁ Data Obtained from 2000 Radioactive Effluent Release Report, Attachment 4