

Primary Containment Vessel of Unit 2 of Fukushima Daiichi Nuclear Power Station Sampling Result of the Gas Control System

[Sampling time & date] February 6, 2012 (Mon) 10:26-10:36 (particulate filter)
11:38-12:08 (charcoal filter)

[Measurement result]

February 8, 2012
Tokyo Electric Power Company

	Nuclides	Density of sample (Bq/cm ³)	Detection limits (Bq/cm ³)	Half-life
particulate filter	I-131	Below measurable limit	$2.1 * 10^{-6}$	About 8 days
	Cs-134	$2.0 * 10^{-5}$	$5.7 * 10^{-6}$	About 2 years
	Cs-137	$2.3 * 10^{-5}$	$6.6 * 10^{-6}$	About 30 years

	Nuclides	Density of sample (Bq/cm ³)	Detection limits (Bq/cm ³)	Half-life
charcoal filter	I-131	Below measurable limit	$1.5 * 10^{-6}$	About 8 days
	Cs-134	$6.7 * 10^{-6}$	$3.3 * 10^{-6}$	About 2 years
	Cs-137	$1.1 * 10^{-5}$	$3.7 * 10^{-6}$	About 30 years
	Kr-85	$1.5 * 10^1$ ※	$5.3 * 10^{-1}$ ※	About 11 years
	Xe-131m	Below measurable limit	$7.4 * 10^{-2}$ ※	About 12 days
	Xe-133	$1.3 * 10^{-2}$ ※	$6.1 * 10^{-3}$ ※	About 5 days
	Xe-135	$2.2 * 10^{-2}$ ※	$2.6 * 10^{-3}$ ※	About 9 hours

※ We calculated the capture rate of rare gases to the charcoal filter from the sampling and measurement results by gas vial container, and evaluated the radioactive material densities and detection limits of rare gases (Kr-85, Xe-131m, Xe-133 and Xe-135). (Because the measurement result of rare gases in the gas vial container was below the measurable limit, we used the past maximum capture rate for the evaluation.)

(Reference) Values before evaluation by the capture rate of rare gases

<u>Nuclides</u>	<u>Density of sample (Bq/cm³)</u>	<u>Detection limits (Bq/cm³)</u>
Kr-85	$7.8 * 10^{-3}$	$2.7 * 10^{-4}$
Xe-131m	Below measurable limit	$3.7 * 10^{-5}$
Xe-133	$6.6 * 10^{-6}$	$3.1 * 10^{-6}$
Xe-135	$1.1 * 10^{-5}$	$1.3 * 10^{-6}$

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February 8, 2012
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[Sampling place] Outlet of gas control system of Primary Containment Vessel of Unit 2

[Sampling time & date] February 6, 2012 (Mon) 11:44

[Measurement result]

Nuclides		Density of sample (Bq/cm ³)	Detection limits (Bq/cm ³)	Half-life
Gas vial container	Kr-85	Below measurable limit	2. 6×10^1	About 11 years
	Xe-131m	Below measurable limit	3. 4×10^0	About 12 days
	Xe-133	Below measurable limit	2. 4×10^{-1}	About 5 days
	Xe-135	Below measurable limit	1. 2×10^{-1}	About 9 hours

In addition to the above nuclides, Cs-137 was detected, which is supposed to exist as particles. The measurement using gas vial container is not suitable for the measurement of low-density radioactive materials in particle status, because the variation in sampled particles is large in each sampling case, resulting in unstable measurement result. This is mainly because the amount of sample is small. Therefore, rare gases (Kr and Xe, etc.), which are supposed to exist evenly in the gas control system, are chosen to be measured.