

Estimated Atmospheric Release of Radioactive Materials Due to Fukushima Daiichi NPS Accident

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Great East Japan Earthquake (March 11, 2011)

Houses Swept Away

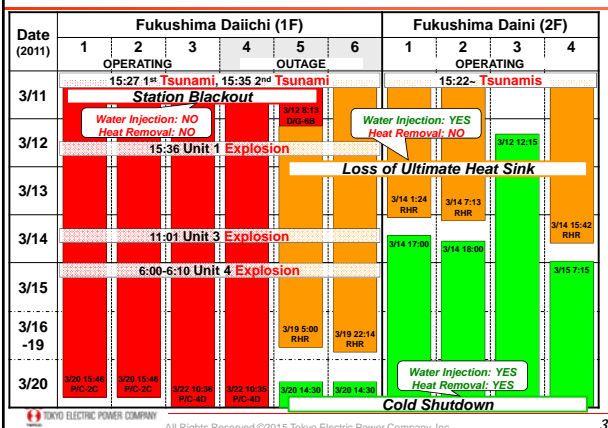
Epicenter

Cruise Ship Stranded

- > **Largest earthquake (M9.0) and tsunami (M9.1) in recorded history of Japan**
- > **20+ m tsunami run-up in coast line spanning 200 km**
- > **560 km² flooded (10x Manhattan)**
- > **19,000 dead/missing**

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Overview of the 10-Unit Simultaneous Accidents



My Post-Accident Activities



IAEA Preliminary Mission
(4/6/2011 @Fukushima Daiichi NPS)

How Much Radioactivity Was Released?

**Estimation of Radioactive
Material Released to the
Atmosphere
During the Fukushima
Daiichi NPS Accident**

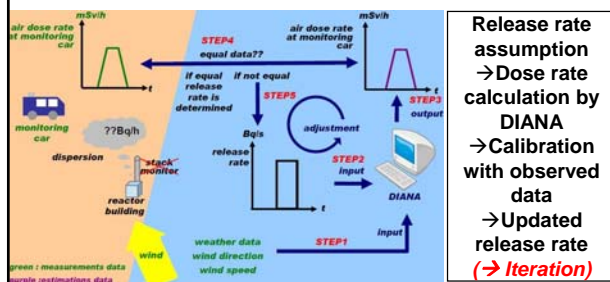
May 2012
Tokyo Electric Power Company

“DIANA” code used to estimate radioactivity release

http://www.tepco.co.jp/en/press/corp-com/release/2012/1204659_1870.html

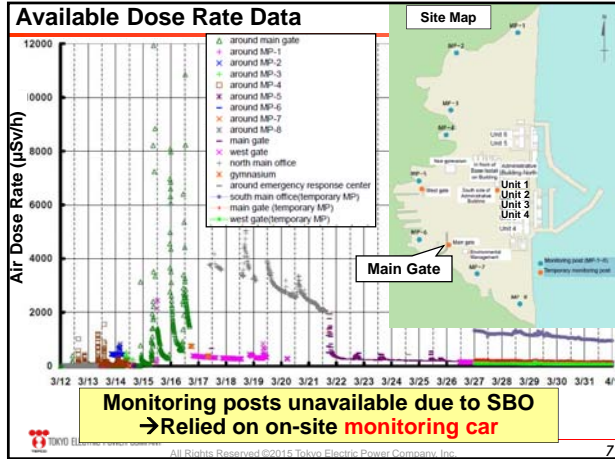
Dose Information Analysis for Nuclear Accident
(3-D Atmospheric Diffusion Model)

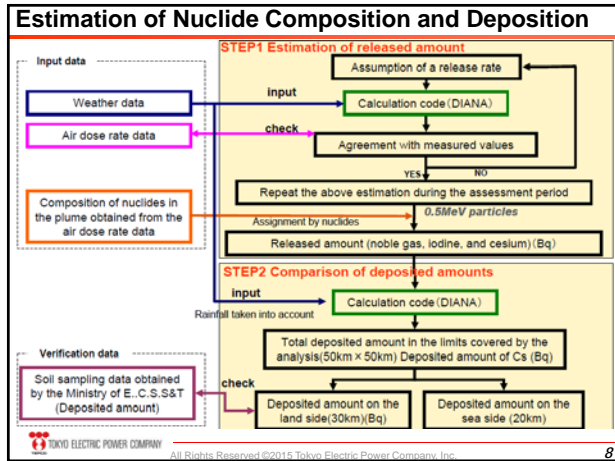
Estimation of Release Rate

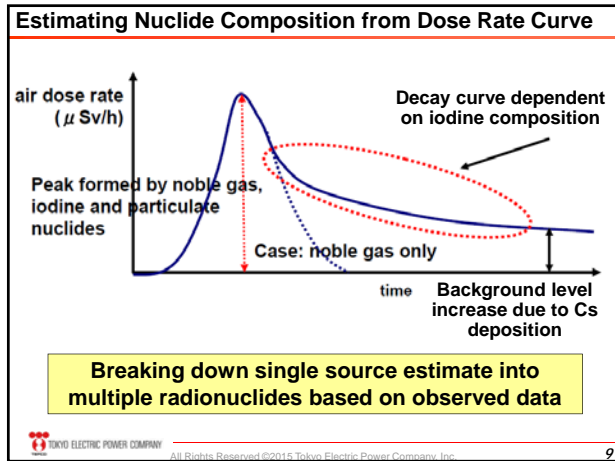


Release rate assumption
→ Dose rate calculation by DIANA
→ Calibration with observed data
→ Updated release rate
(→ Iteration)

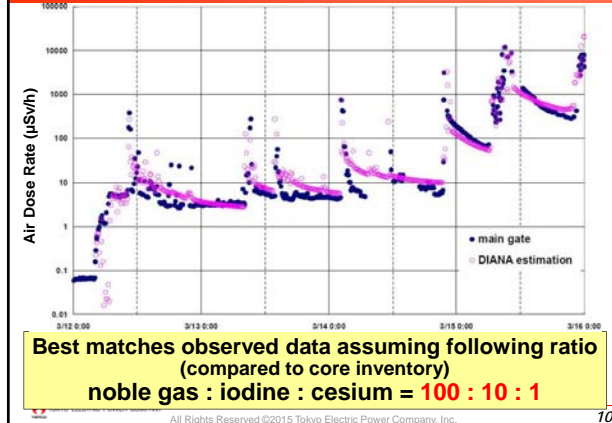
**Back-calculated release rate based on
observed air dose rate
(stack monitor was lost due to SBO)**



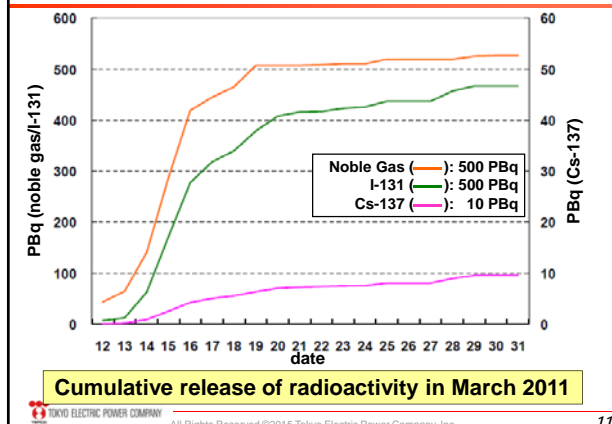




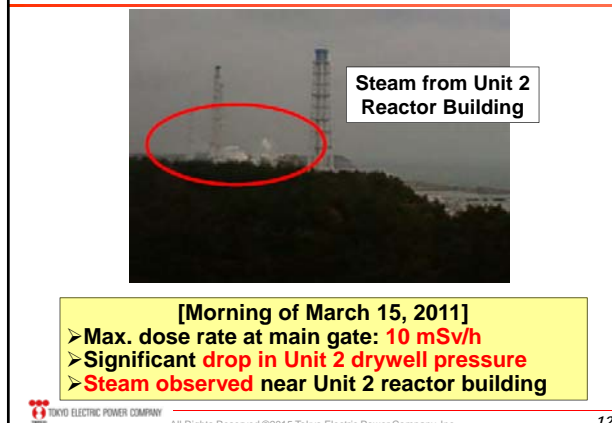
Estimating Susceptibility of Release of Radionuclides



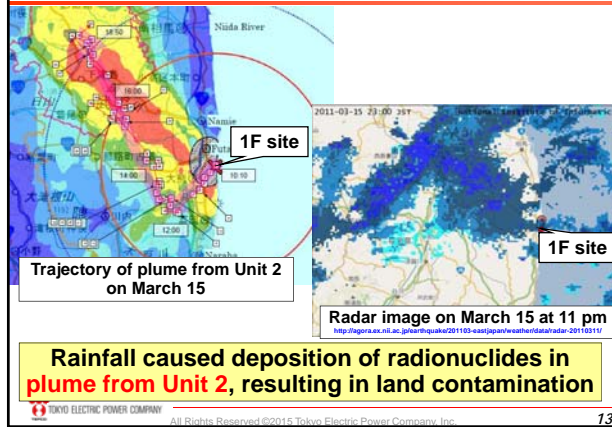
Estimated Cumulative Release



Land Contamination in Northwest Area



Land Contamination in Northwest Area (cont'd)



Summary Results

Release Mode	Noble Gas (PBq)	I-131 (PBq)	Cs-134 (PBq)	Cs-137 (PBq)	INES (PBq) (I-equivalent)
Containment Venting	5	1	0.02	0.01	-
Reactor Building Explosion	10	3	0.07	0.05	-
Uncontrolled Release from R/B	500	500	10	10	-
Total	500	500	10	10	900
<i>Cf. Chernobyl</i>	6,500	1,800	-	85	5,200

Dominant release path assumed to be uncontrolled release from reactor buildings (not venting or explosion)

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Current Status of Fukushima Daiichi (1F)

