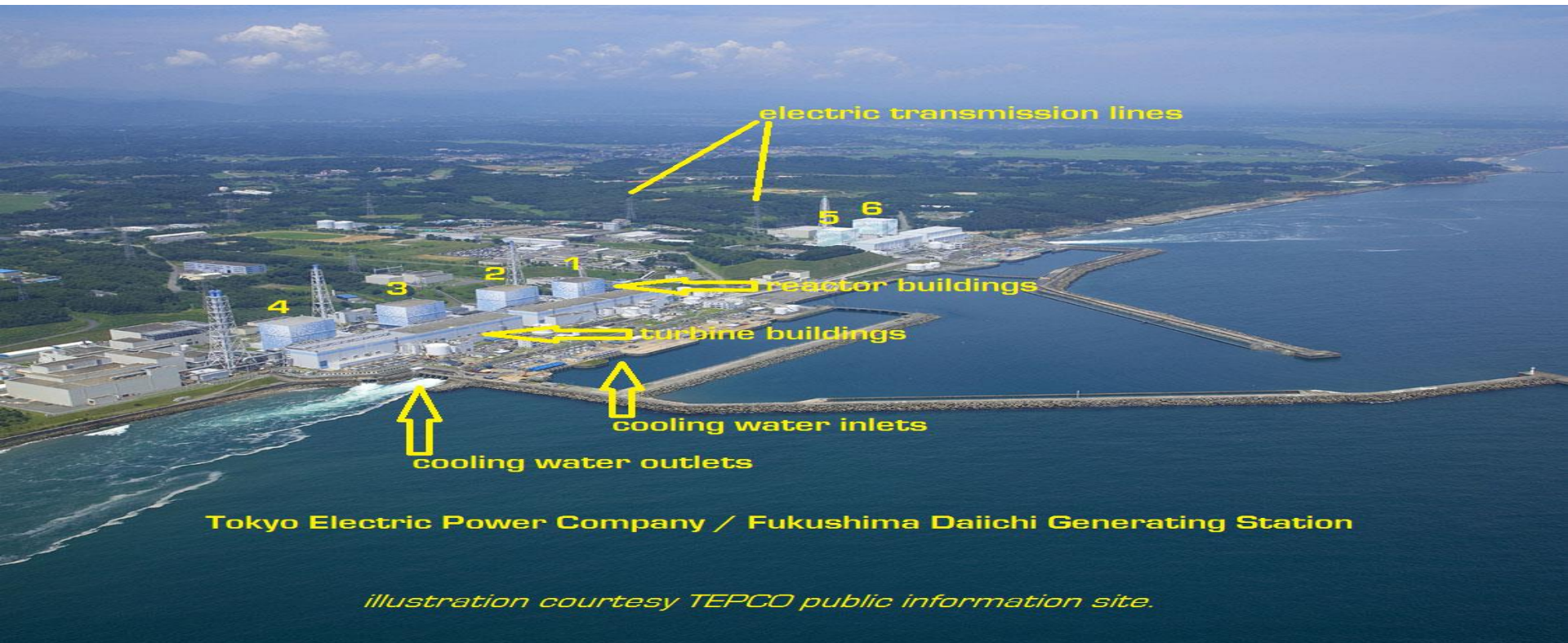


Fukushima Daiichi Nuclear Disaster



By:

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Introduction

- Introduction
- Overview
 - Summary of event
- Preventative Measures
 - Ignored warnings
- Reactor
 - What happened?

Introduction

- Aftermath/Decon.
 - Radiation leaks
- Our preventative measures
- Bottom line:
 - raise equipment
 - salt water pumps, generators

Overview

On March 11, 2011, the Tōhoku earthquake and subsequent tsunami hit the Fukushima Daiichi nuclear power plant.



The Tsunami

The earthquake triggered the automatic SCRAM shutdown procedures and then the tsunami flooded the generators for the cooling system.



The Reactors Explode

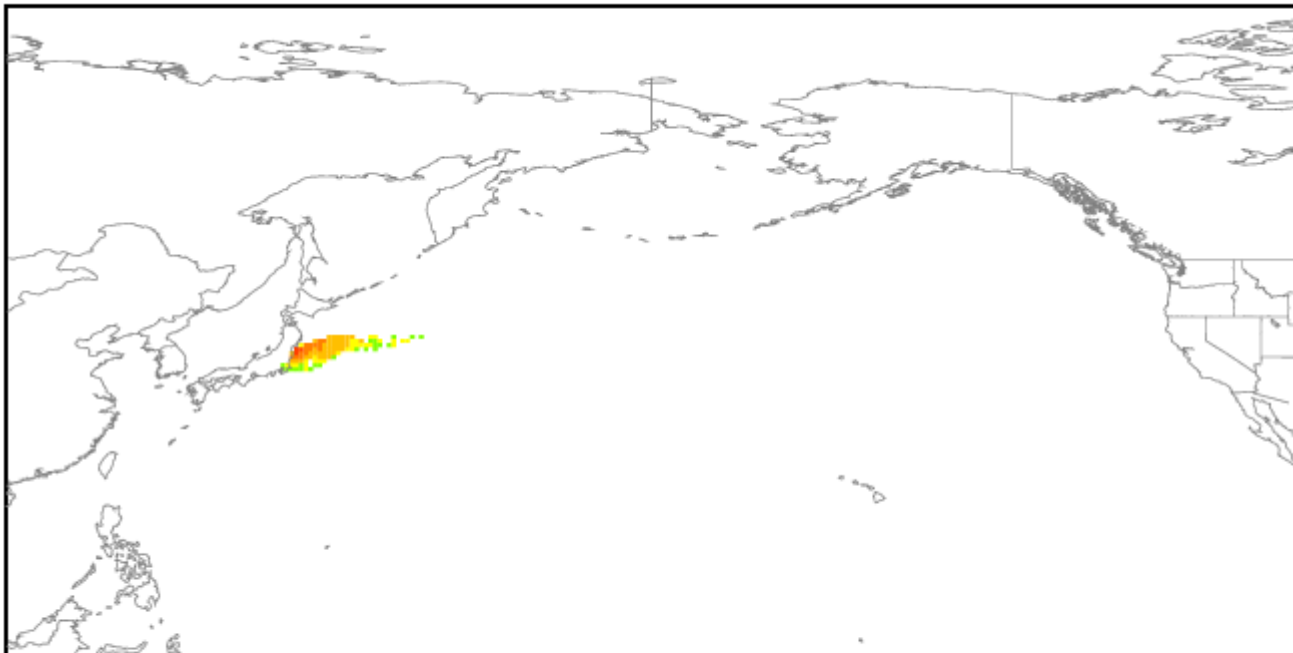
When the reactors overheated they released hydrogen gas which then exploded.



Fallout

Reactors 1,2, and 3 exploded sending radioactive fallout globally.

0z 15 Mar 11; species = C137; level(m) = 0



Contributing Factors

- Changed construction plans
 - Daiichi built lower despite engineers' warnings
 - lower pumping cost
 - sealed off pumps
 - 1990 U.S. Nuclear Regulatory Committee Report on seismic damage
- TEPCO warned about likely seismic event in 2000, no changes were made

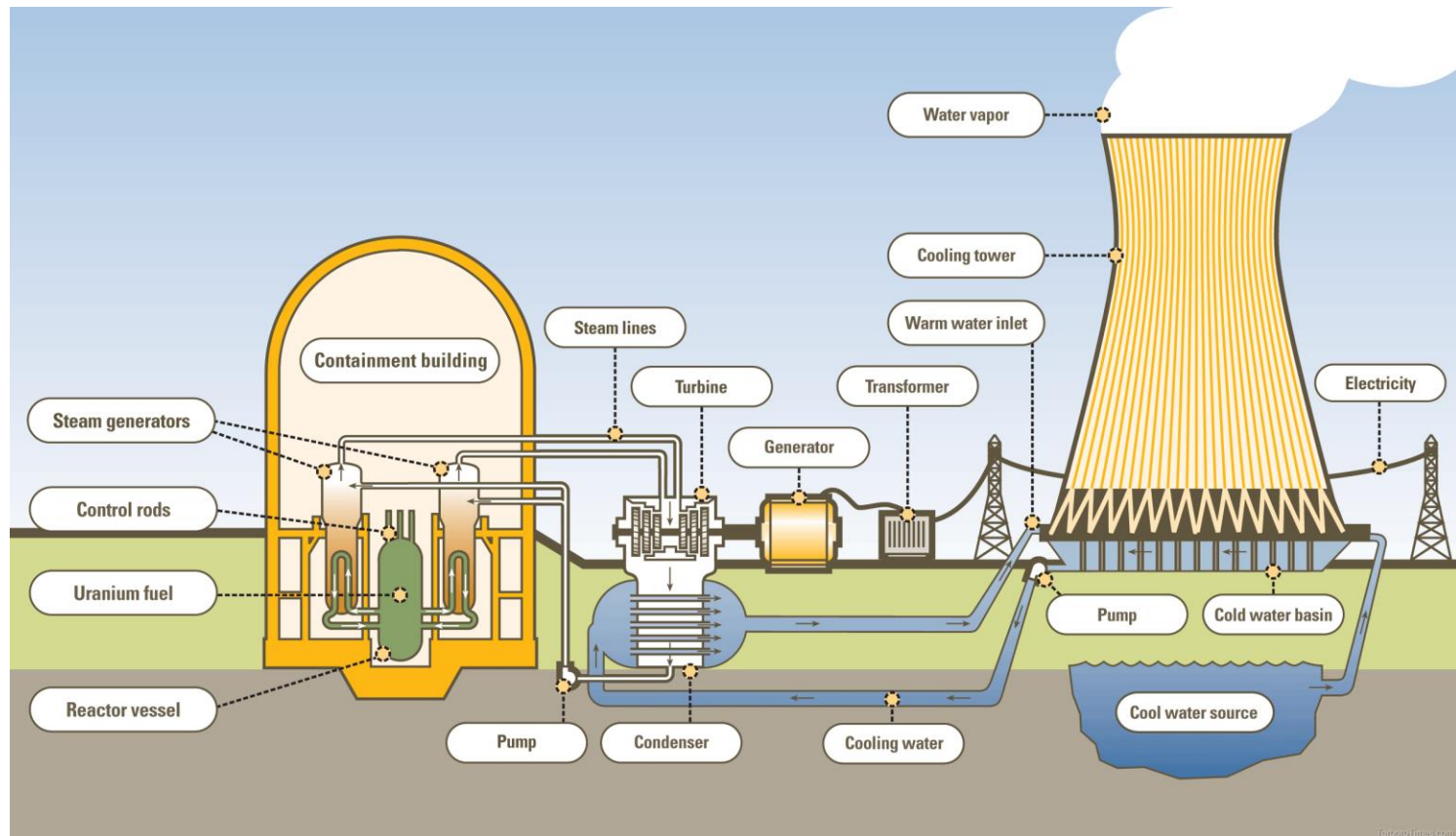
Reactor

- Earthquake happens
- 41 minutes later Tsunami happens
 - Seawater cooling pumps break
 - Condensers didn't work

Reactor (cont'd)

- Steam builds in Reactor 1 with hydrogen
- Reactor 1 had a hydrogen explosion
- Then Reactor 3 followed by Reactor 2
- Reactor 1,2 & 3 all reach meltdown
- Hydrogen explosions releases radioactive matter into the environment

Nuclear Reactor



Aftermath

- March 25, 2011 - 20km-30km radius around Fukushima “voluntary evacuation”
- April 21, 2011 - 20 km around Fukushima “no go area”

Aftermath (cont'd)

- Six Fukushima workers reach radiation of 250 mSv
- 160,000 locals evacuated from area
- Water treated and sent to sea

Treatment & Decontamination



Our Preventative Measures

- Research Data
 - 99% probability of 7.5 mag earthquake (JGRC)*
 - 1:1000, 20m tsunamis
 - Geographical location

*Statistics provided by Carnegie Endowment for International Peace

Our Preventative Measures (cont'd)

- Relationship with government/research agn.
 - Japanese Government Research Committee
 - Nuclear and Industrial Safety Agency (NISA)
 - Japanese Society of Civil Engineers (JSCE)

Our Preventative Measures (cont'd)

- Stricter Regulations
 - NISA
 - Bureaucracy
- Placement of back-ups
 - NOT in basement
- Watertight connections
 - Improving Heat sinks

Conclusion

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Conclusion (cont'd)

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References

Carnegie Endowment for International Peace Website:

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