

# The Detection of Fuel Debris inside the Unit 2 Reactor using A Muon Measurement Technology at Fukushima Daiichi Nuclear Power Station

March 17, 2016

Tokyo Electric Power Company



**IRID**

---

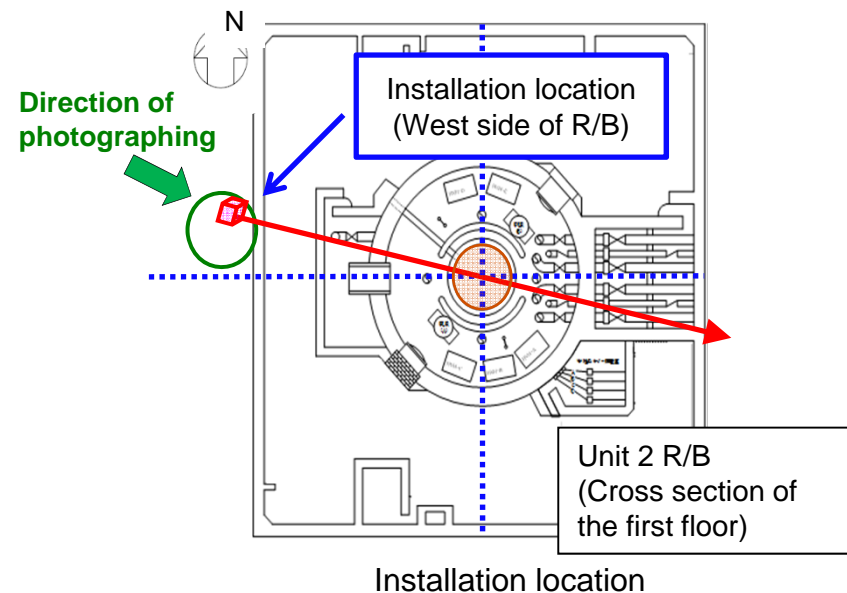
The contents in this document is what TEPCO carries out as a part of the project developed by the International Research Institute for Nuclear Decommissioning (IRID).

# Overview

- A muon technology was developed under the government project called “the Development of Technologies for the Detection of Fuel Debris inside Reactors,” to detect fuel debris inside the reactor by measuring cosmic ray muons which pass through the reactor. The development costs were subsidized by the FY 2013 supplementary budget allocated for the projects of decommissioning and contaminated water management.
- From February to September 2015, the measurement using the muon transmission method was carried out at Unit 1. The measurement results revealed that there was no chunk of fuel debris larger than 1 meter around the reactor core region.
- The measurement results at Unit 1 proved the effectiveness of the muon transmission method. Thus, the same measurement method will be applied to Unit 2 from March 2016.

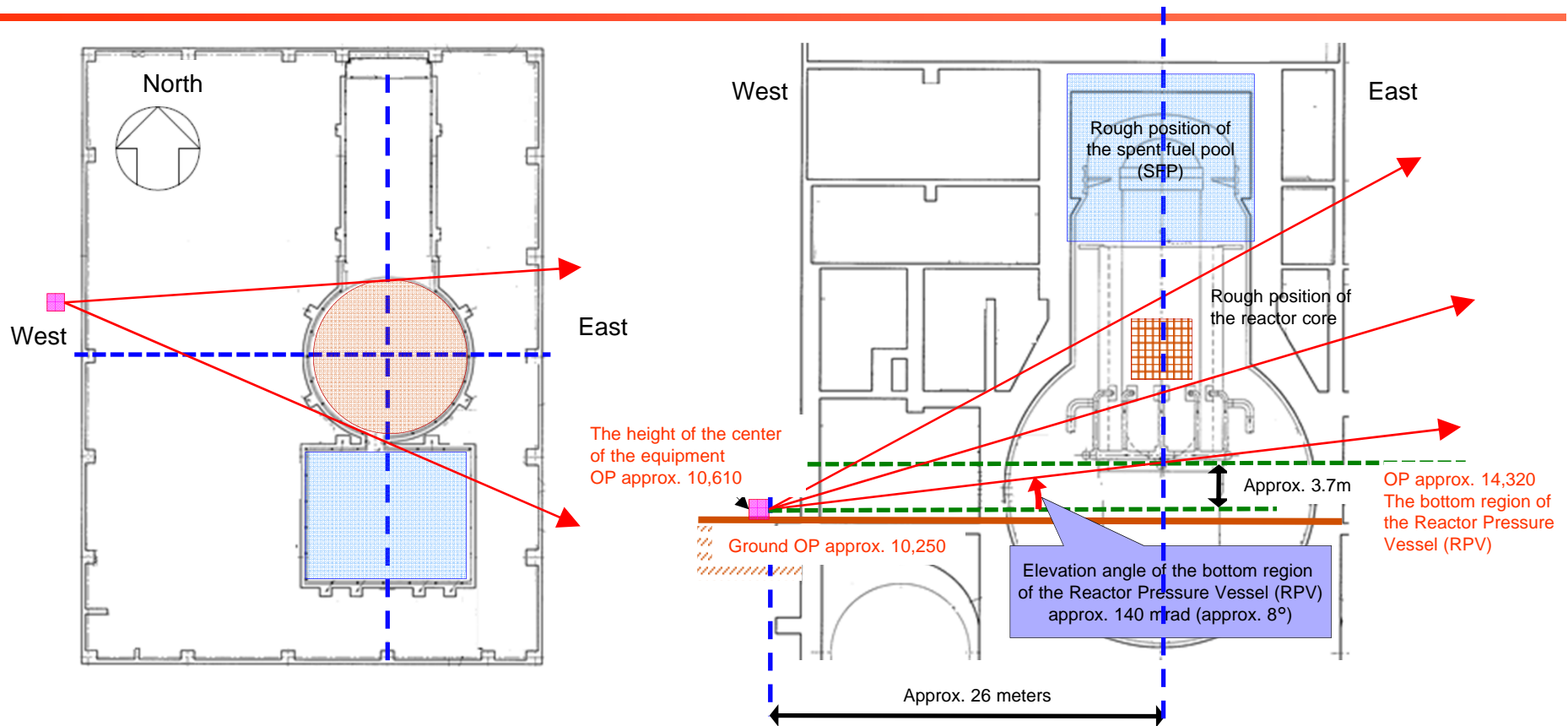


Installation of muon-measuring equipment  
(downsized to approx. 1m × 1m × 1.3m(height))



Installation location

# Measurable range of muon transmission method at Unit 2



- The muon rays that come in an elevation angle below approx. 7-8° possess higher energy and penetrating power and thus cannot be measured accurately.
- The measuring equipment was installed in an angle close to the lowest limit to capture the almost entire region of the Reactor Pressure Vessel (RPV).
- Being located on the west side of the Unit 2 reactor building (R/B), the equipment can measure the reactor without overlapping with the spent fuel pool (SFP).

# Outline of schedule for the measurement

