

Transportation of leakage and deformed fuels to  
the common pool from the spent fuel pool  
at Unit 4, Fukushima Daiichi Nuclear Power Station

July 31, 2014

Tokyo Electric Power Company

# 1. Application for changes in the implementation plan

- To add the description to the effect that the leakage fuel (two fuels) and deformed fuel (one fuel) having existed at 1F4SFP before the earthquake are to be transferred into the common pool together with fine fuels using NFT-12B cask, the application for changes in the implementation plan is made.

- Changes:

- Chapter II, 2.11 Equipment for removing fuels from spent fuel pool

- ✓ The followings are added to the major specification shown at 2.11.2.1

- (2) Transportation container for site use.

- (for Unit 4)

- |           |         |
|-----------|---------|
| Model No. | NFT-12B |
|-----------|---------|

- |                     |          |
|---------------------|----------|
| No. of fuels stored | 12 fuels |
|---------------------|----------|

- |                   |   |
|-------------------|---|
| No. of containers | 2 |
|-------------------|---|

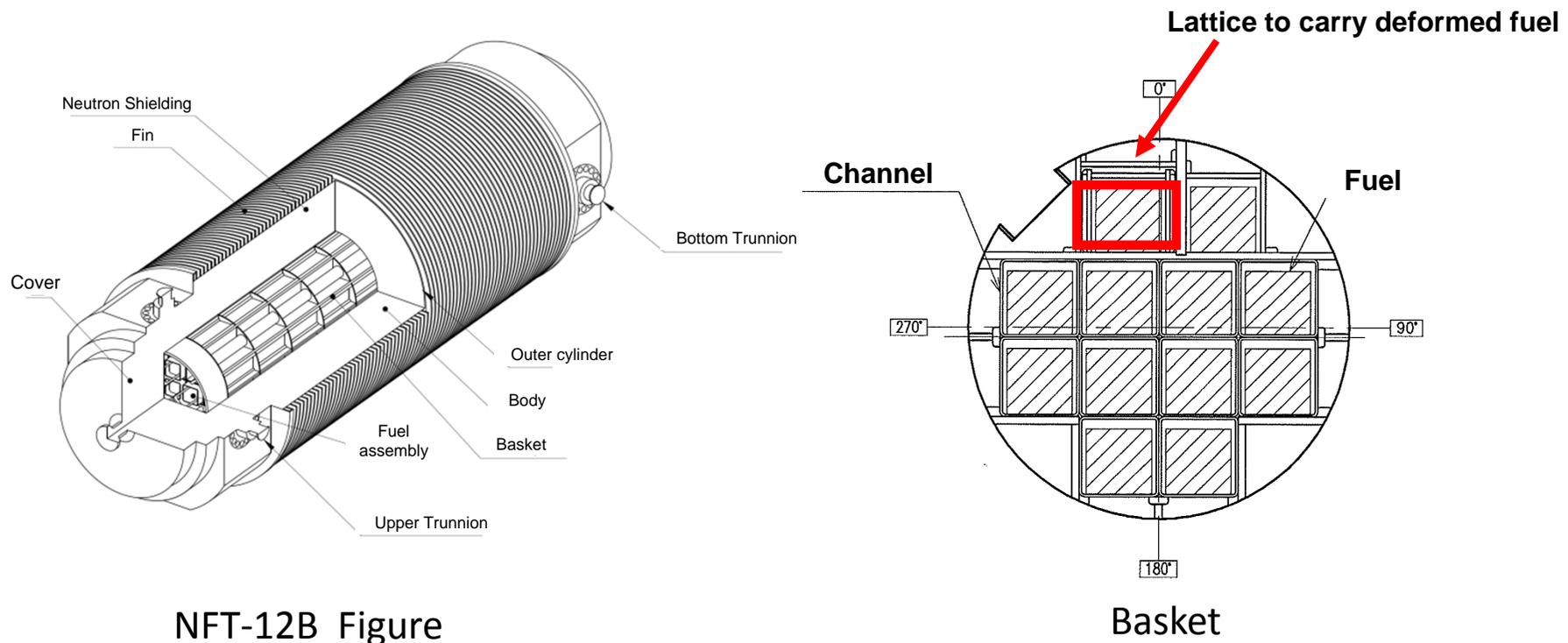
- ✓ The evaluation for a new way of transportation of leakage and deformed fuels using the model, NFT-12B, is added to “Appendix 2-1 Guidelines on the safety functions and structural strength of the transportation container for site use”.
    - ✓ The model, NFT-12B, etc., is added to the “Appendix 2-3 Instructions on the transportation within the premises (Unit 4)” (description adjustment)

## 2. Container used for transportation to the common pool

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■ For the transportation of leakage and deformed fuels, the existing container, NFT-12B model (12 fuels capacity), is to be used.

- ✓ Deformed fuel is to be transferred by being placed in the biggest lattice (in diameter) in the basket.
- ✓ Leakage fuels are to be transferred by being placed in other lattices in normal size in the basket,.
- ✓ Fine fuels are also to be transferred by being placed in the same basket together with both deformed and leakage fuels.
- ✓ A safety evaluation such as subcriticality evaluation is to be conducted newly, assuming pellets scattering off of a fuel rod during the transfer of these leakage and deformed fuels.



NFT-12B Figure

Basket

### 3. Future actions to be taken

- Heretofore, the transportation from Unit 4 to common pool using NFT-22B has been performed 54 times. (One time for new fuel, and 53 times for spent fuels.)
- The spent fuel transportation using NFT-22B container will be restarted as soon as the underway inspection of the crane is completed.
- After the above action has been taken, the transportation of leakage and deformed fuels using NFT-12B is to be performed once all the necessary arrangements have been made after the implementation plan was approved. New fuels are to be also transferred to Unit 6.

Future Transportation Plan

	No. of spent fuels at Unit 4		Casks used: No. of transportations performed	Where to store
Spent fuels	165	Fine fuels: 162	NFT-22B: 7 (Fine fuel: 154)	Common Pool
		Leakage fuel: 2	NFT-12B: 1	
		Deformed fuel: 1	(Fine fuels: 8/ Leakage fuel: 2/ Deformed fuel: 1)	
New fuels*	180		NFT-22B: 9	Unit 6

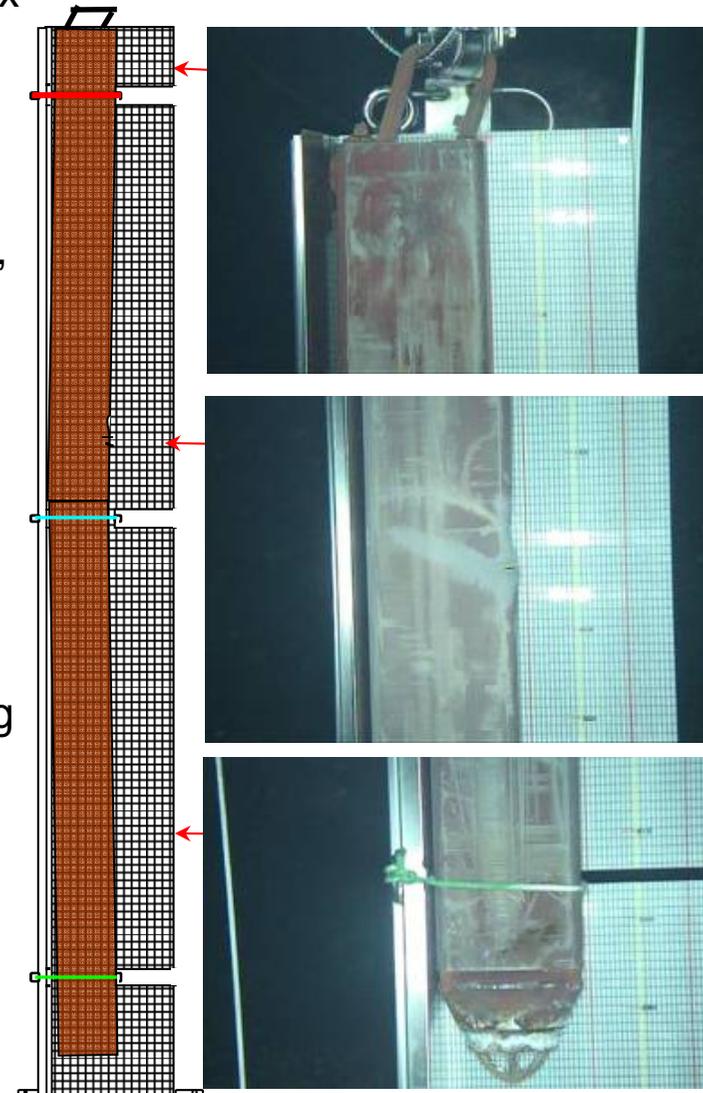
\* The implementation plan for the transportation of new fuels to Unit 6 is filed separately.

# 【Reference】 Deformed fuel

## ■ Deformed fuel (one fuel)

- ✓ The fuel\* inadvertently deformed its handle/channel box at the time of being handled (Apr. 1982). Currently stored in the rack for fuel rods and fuels.
- ✓ The distortion degree was measured by pulling it up with a hoisting tool attached to the ceiling crane in Dec, 2013, to find that the outer diameter had 156 mm at a maximum. (taking into account an error within 5 mm). (Publicized at the Council for the Decommissioning of TEPCO's Fukushima Daiichi NPS Meeting dated Jan 30, 2014 )
- ✓ The deformed fuel is hard to be handled with a fuel handling device because of its distorted handle, therefore, instead, a hoisting tool attached to the ceiling crane will be used for the operation at both Unit 4 and the common pool.

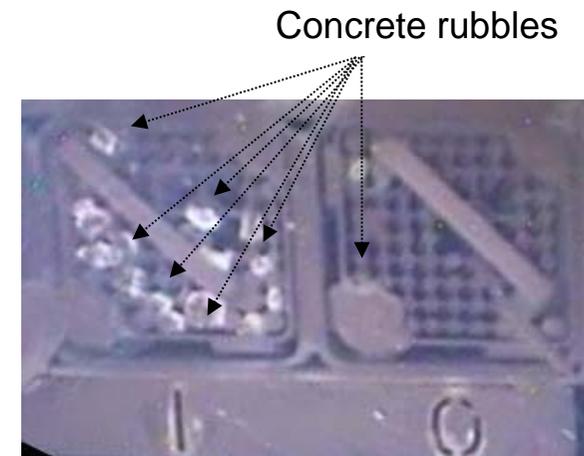
\* The occurrence status and investigation results have been publicized at NUCIA (Nuclear Information Archives) (Report No.: 1982-Tokyo- T003)



Measurement of the distortion degree of the deformed fuel

## 【Reference】 Leakage fuels

- Leakage fuels (2 fuels)
  - ✓ Fuels with leakage detected during the operation in May 2006 and June 2007 respectively.
  - ✓ For both cases, after identifying the location of the fuels in doubt of leakage through the output suppression methods after the leakage was detected, control rods were inserted around the location to continue the operation.
  - ✓ After the operation was suspended, the identification of the leakage fuels was performed through the shipping test. In addition, a detailed observation was conducted on the leakage fuels after they were transferred to the spent fuel pool (before the earthquake). Any leakage hole or crack to the cladding tube has not yet been identified.
  - ✓ Since the two leakage fuels were stored at the place where little rubbles fell on at the time the earthquake and no distortion to their handles is seen, it is unlikely that the condition of the fuels have gotten worse by the earthquake.



Storage of leakage fuels (two fuels (image taken in March, 2012, before rubbles were removed.))