Outline of Water Injection to Reactors by Fire Engines

<Legend>

: Water supply

: Hose installation only (no water supply)

: Water pumping to fire engine tank

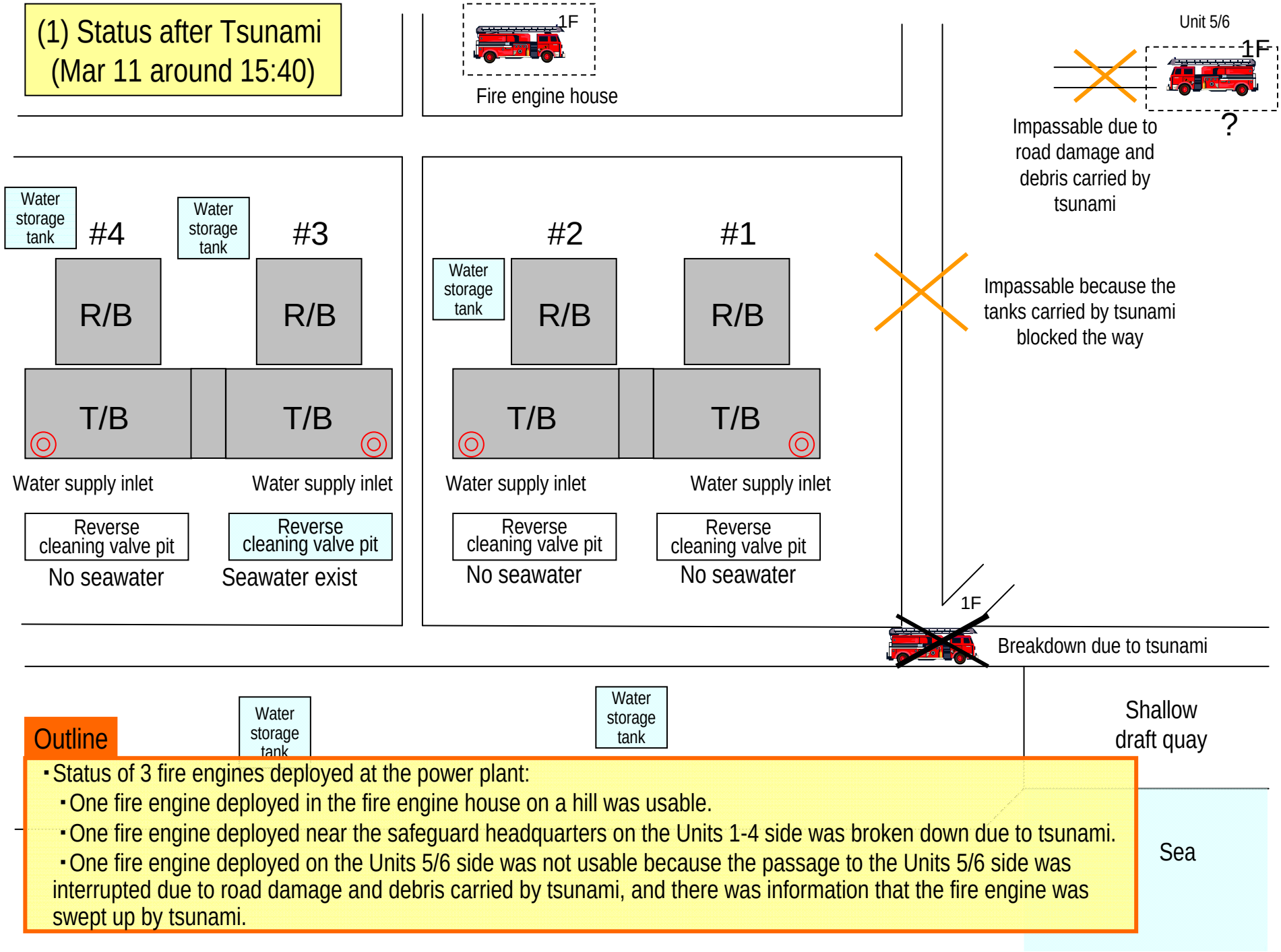
: Move of fire engine

: Fire engine of ○○

R/B: Reactor building

T/B: Turbine building

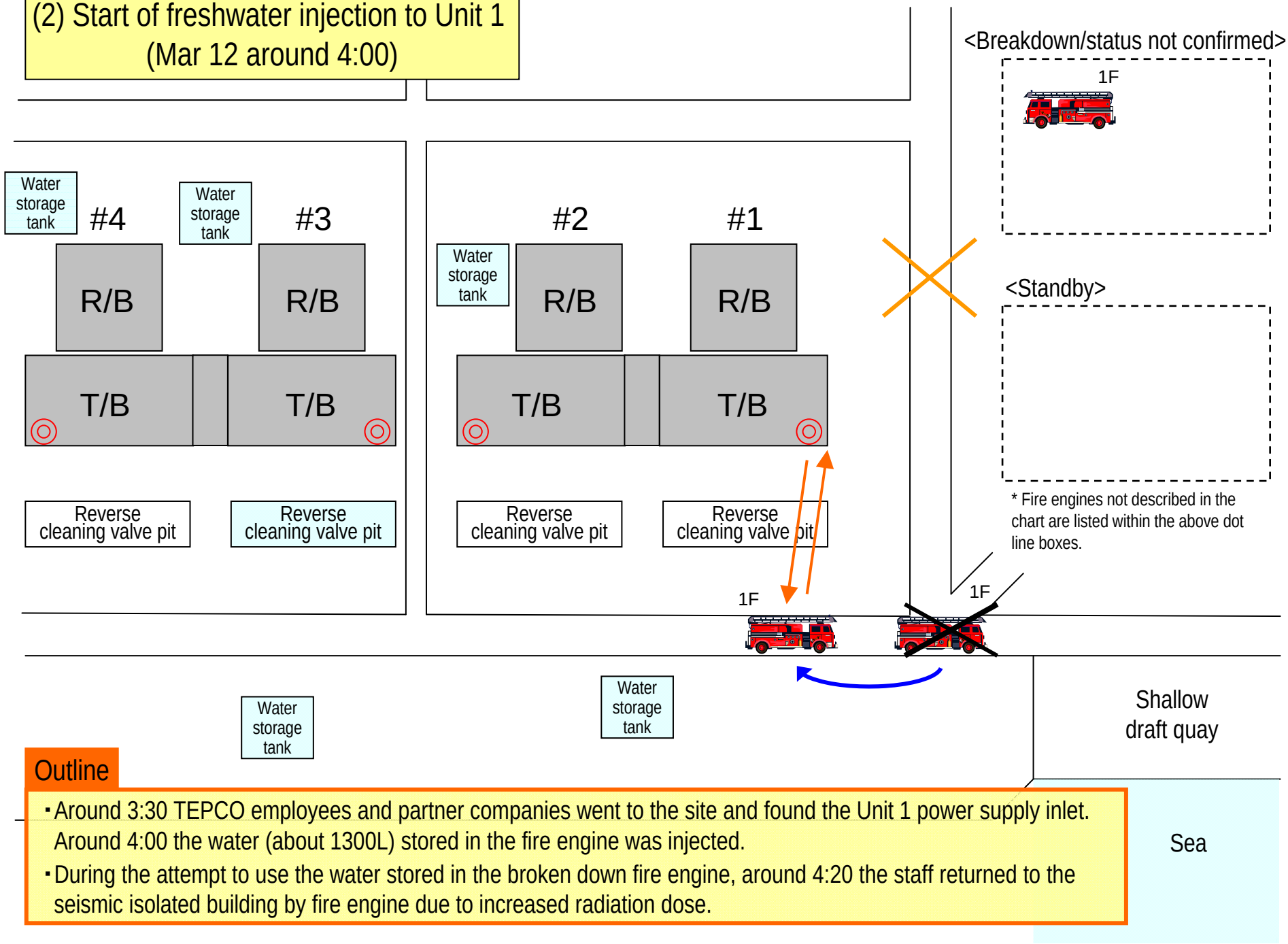
1F: Fukushima Daiichi Nuclear Power Plant
2F: Fukushima Daiini Nuclear Power Plant
KK: Kashiwazaki Kariwa Nuclear Power Plant
SD: Self-Defense Forces PF: Public Fire Station



Outline

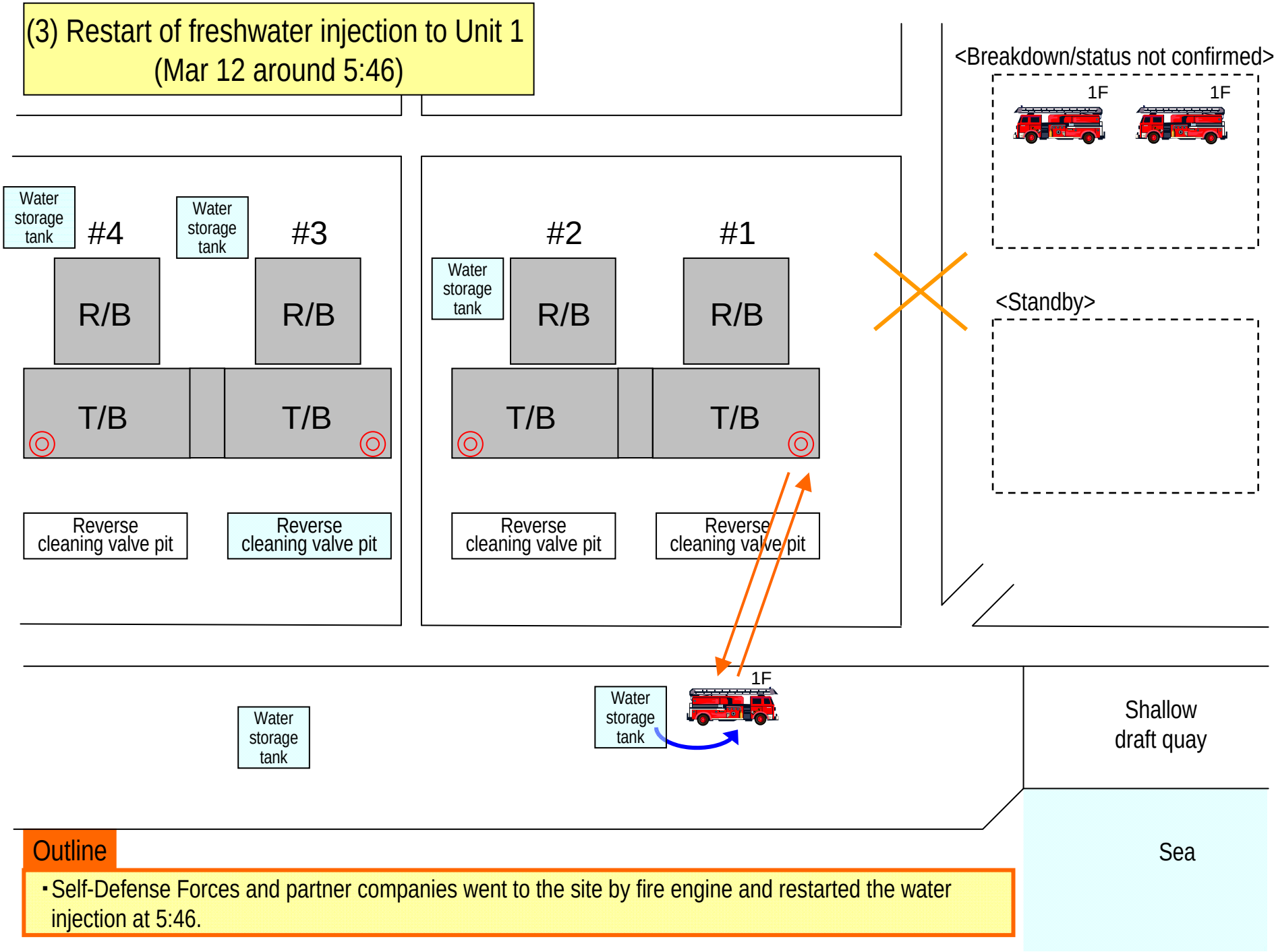
- Status of 3 fire engines deployed at the power plant:
  - One fire engine deployed in the fire engine house on a hill was usable.
  - One fire engine deployed near the safeguard headquarters on the Units 1-4 side was broken down due to tsunami.
  - One fire engine deployed on the Units 5/6 side was not usable because the passage to the Units 5/6 side was interrupted due to road damage and debris carried by tsunami, and there was information that the fire engine was swept up by tsunami.

(2) Start of freshwater injection to Unit 1 (Mar 12 around 4:00)



Outline

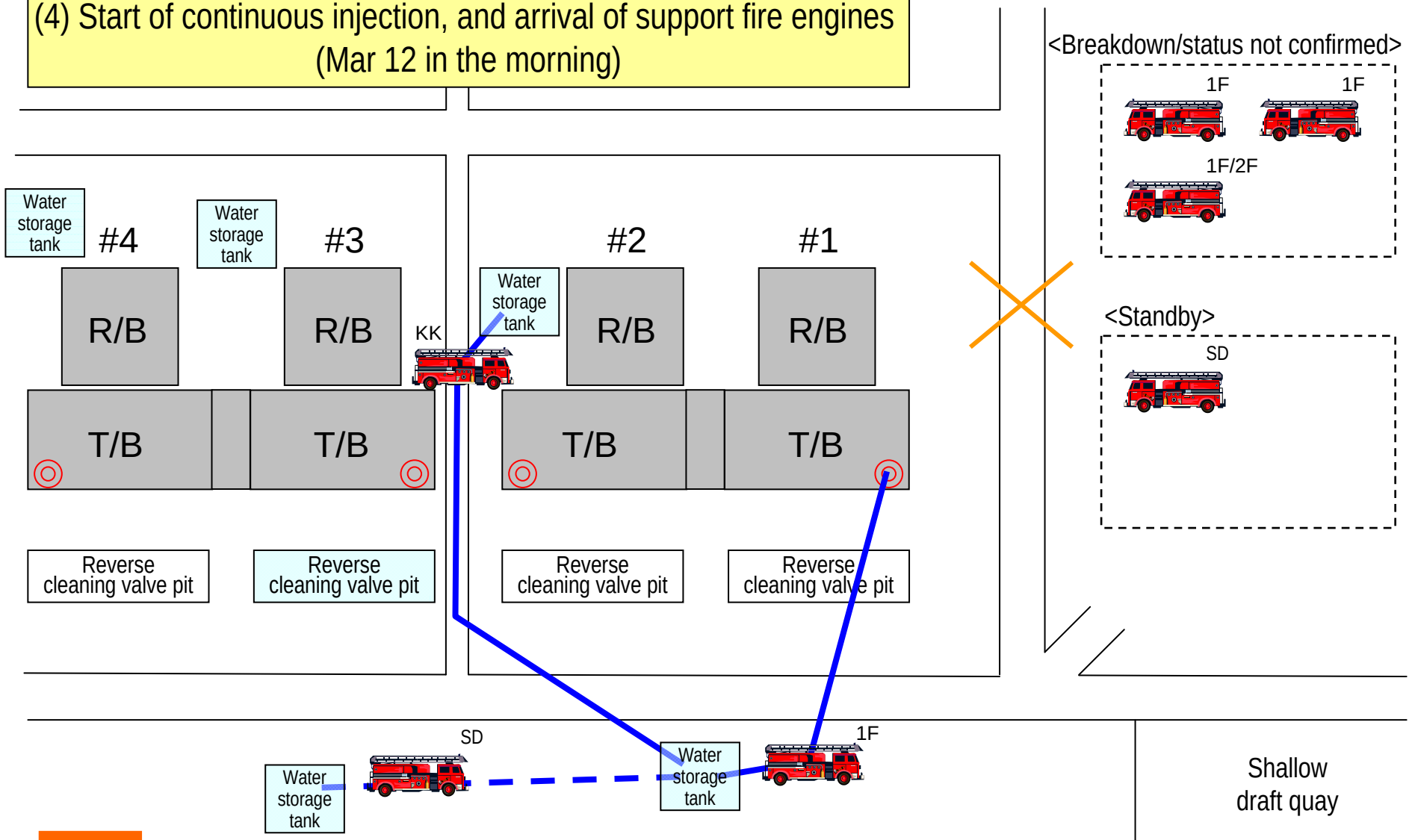
- Around 3:30 TEPCO employees and partner companies went to the site and found the Unit 1 power supply inlet. Around 4:00 the water (about 1300L) stored in the fire engine was injected.
- During the attempt to use the water stored in the broken down fire engine, around 4:20 the staff returned to the seismic isolated building by fire engine due to increased radiation dose.



Outline

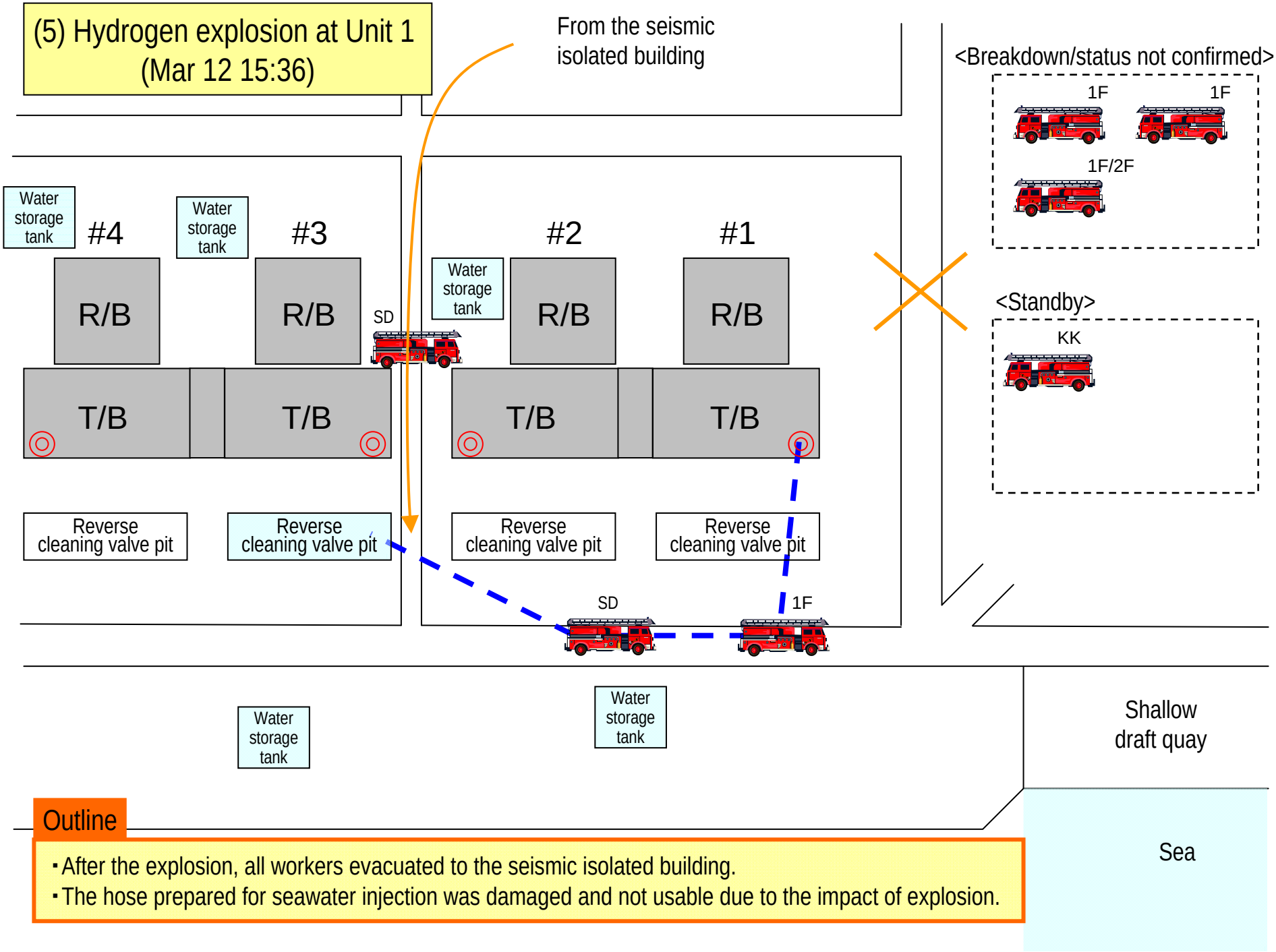
- Self-Defense Forces and partner companies went to the site by fire engine and restarted the water injection at 5:46.

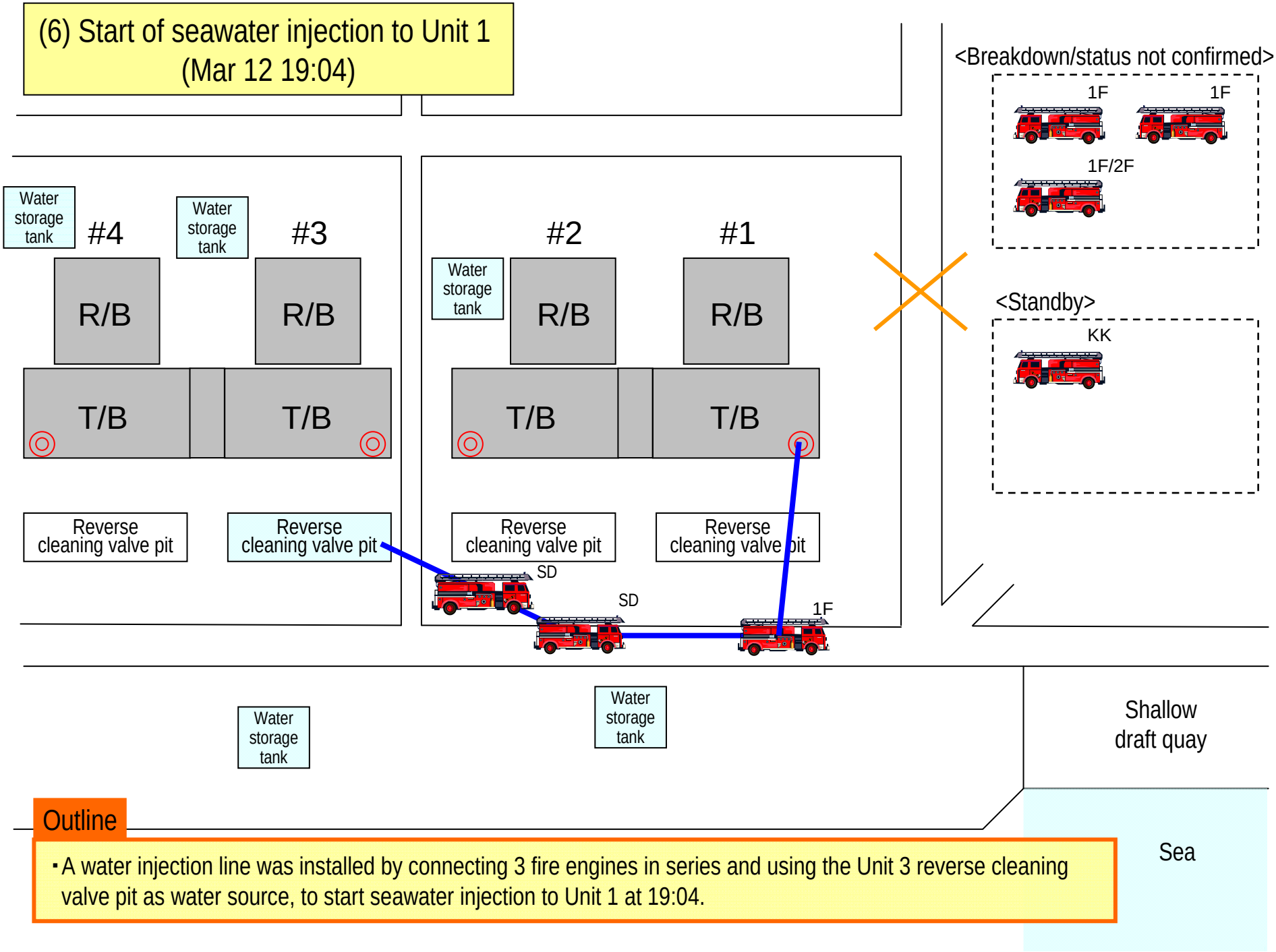
(4) Start of continuous injection, and arrival of support fire engines (Mar 12 in the morning)



Outline

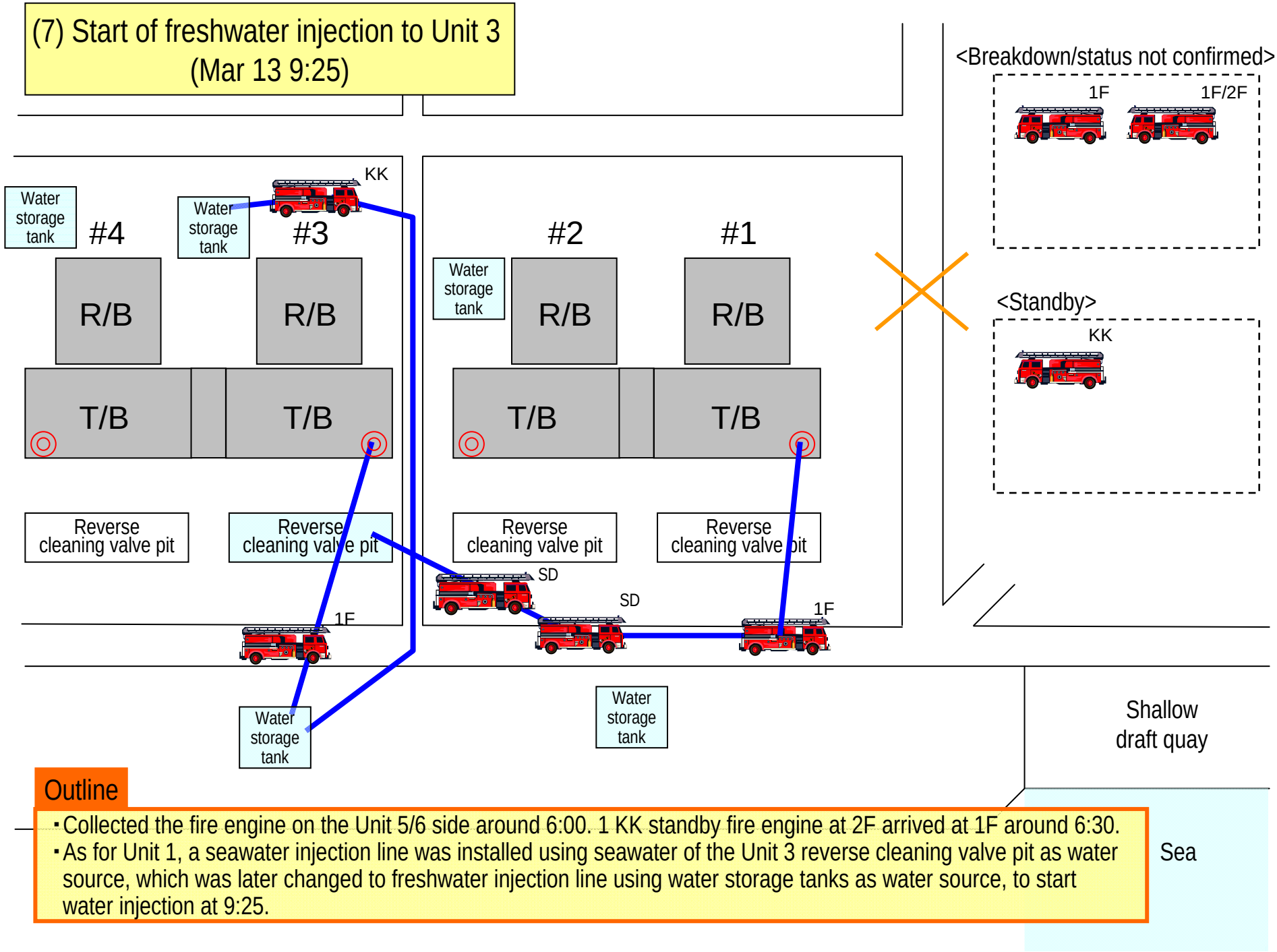
- Continuous water injection line from the water storage tank to water supply inlet was installed to inject water.
- KK arrived at the site around 10:30, and the fire engine of Self-Defense Forces arrived before noon. Water was supplied from water storage tanks around the site to the water storage tanks to the Unit 1 side.
- In addition, 1 chemical fire engine shared by 1F and 2F was moved from 2F. (The fire engine was not used actually because of its old model.)


(5) Hydrogen explosion at Unit 1
(Mar 12 15:36)
From the seismic isolated building
<Breakdown/status not confirmed>
1F
1F
1F/2F
<Standby>
KK
Water storage tank
#4
Water storage tank
#3
Water storage tank
#2
#1
R/B
R/B
R/B
R/B
SD
T/B
T/B
T/B
T/B
Reverse cleaning valve pit
Reverse cleaning valve pit
Reverse cleaning valve pit
Reverse cleaning valve pit
SD
1F
Water storage tank
Water storage tank
Shallow draft quay
Sea
Outline
・After the explosion, all workers evacuated to the seismic isolated building.
・The hose prepared for seawater injection was damaged and not usable due to the impact of explosion.



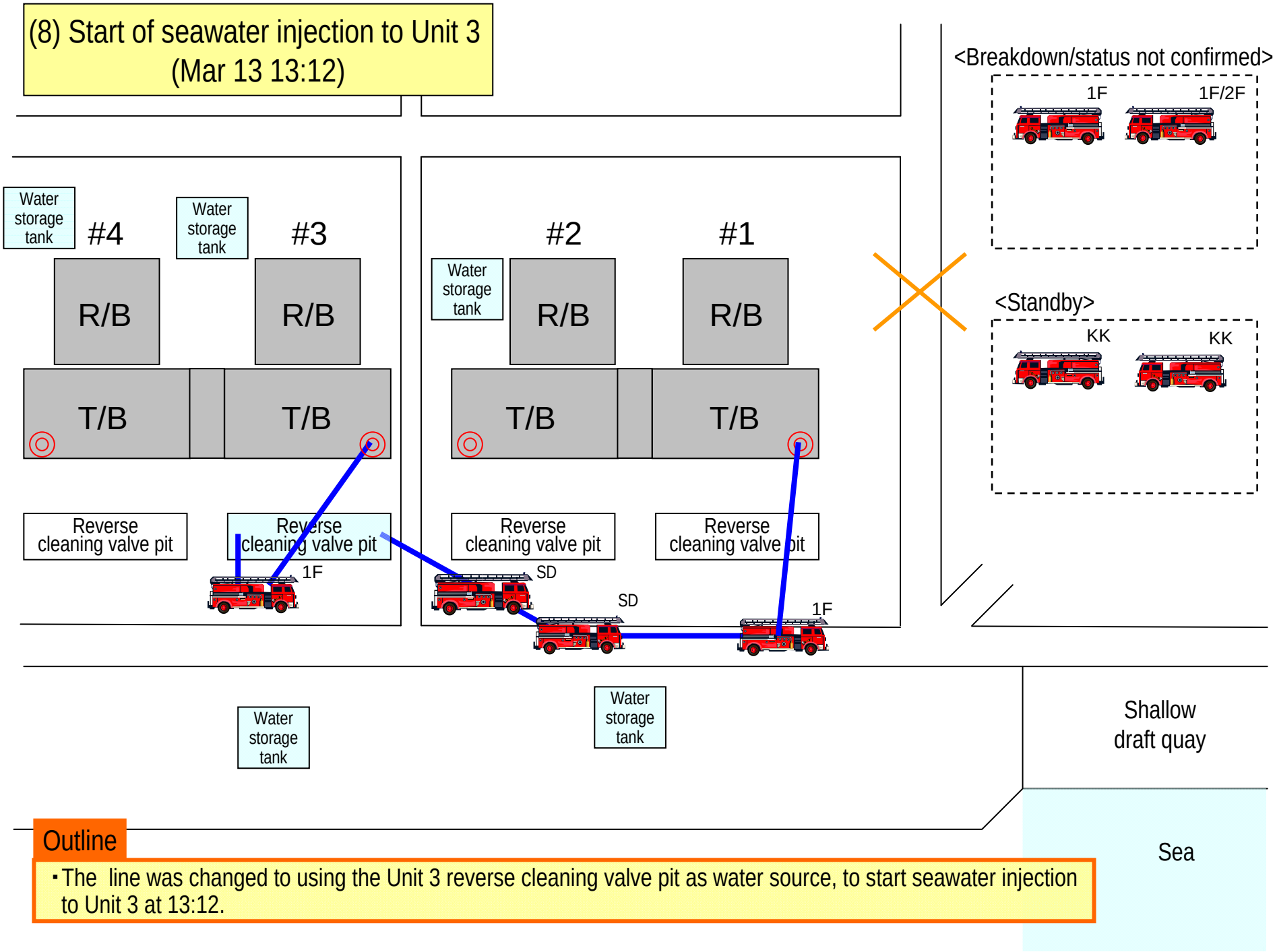
Outline

- A water injection line was installed by connecting 3 fire engines in series and using the Unit 3 reverse cleaning valve pit as water source, to start seawater injection to Unit 1 at 19:04.



Outline

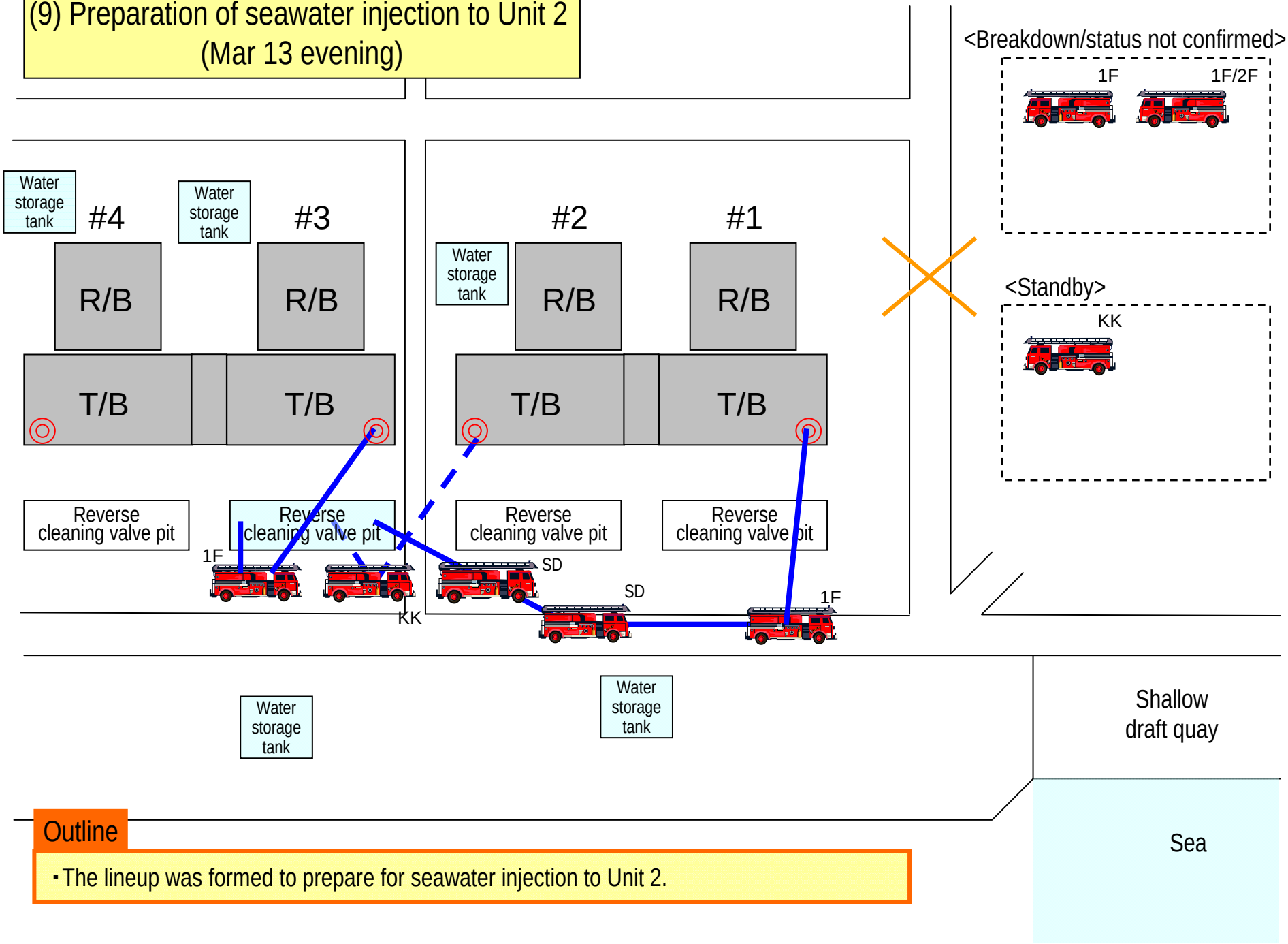
- Collected the fire engine on the Unit 5/6 side around 6:00. 1 KK standby fire engine at 2F arrived at 1F around 6:30.
- As for Unit 1, a seawater injection line was installed using seawater of the Unit 3 reverse cleaning valve pit as water source, which was later changed to freshwater injection line using water storage tanks as water source, to start water injection at 9:25.



Outline

- The line was changed to using the Unit 3 reverse cleaning valve pit as water source, to start seawater injection to Unit 3 at 13:12.

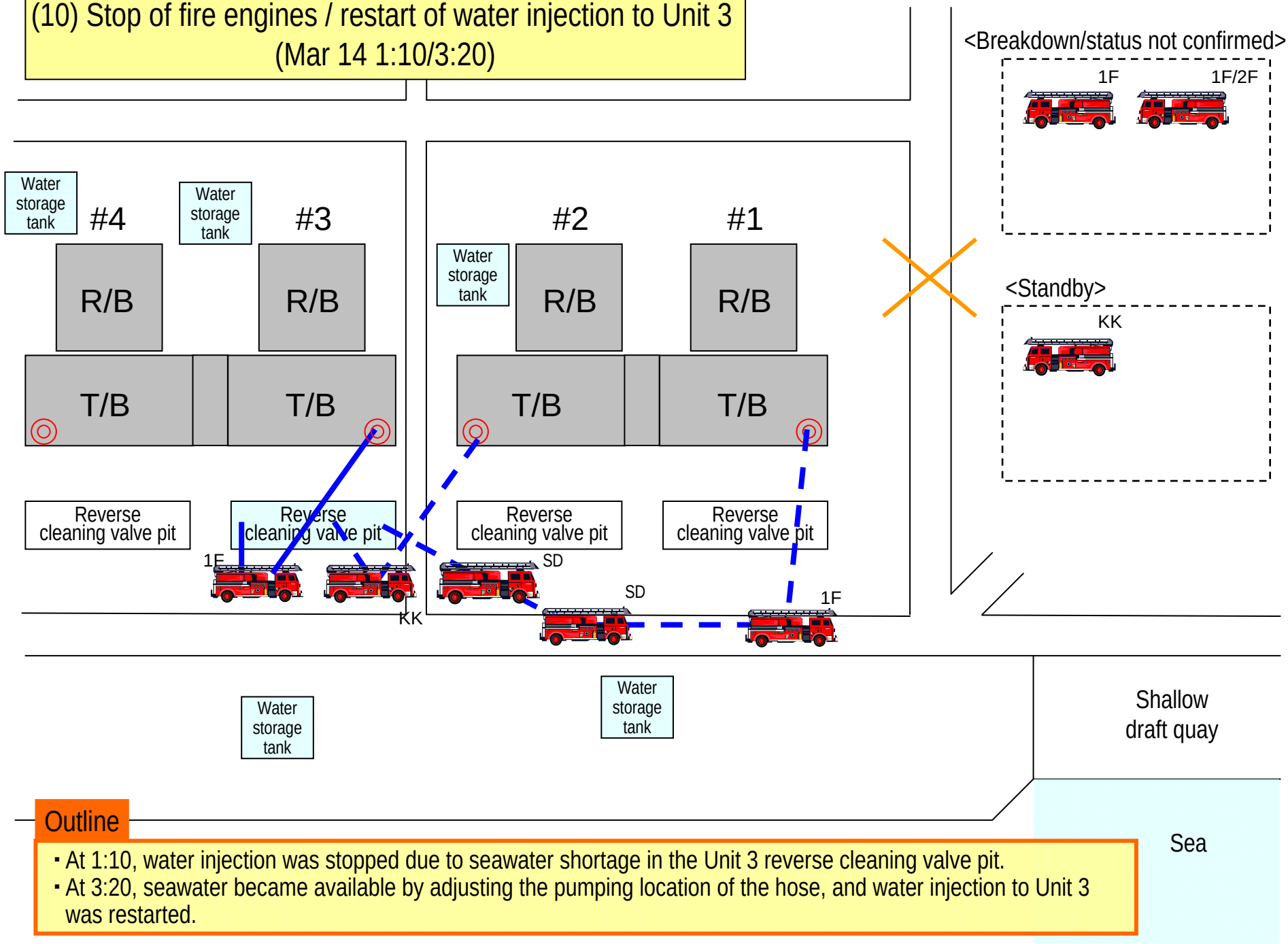
(9) Preparation of seawater injection to Unit 2 (Mar 13 evening)



Outline

- The lineup was formed to prepare for seawater injection to Unit 2.

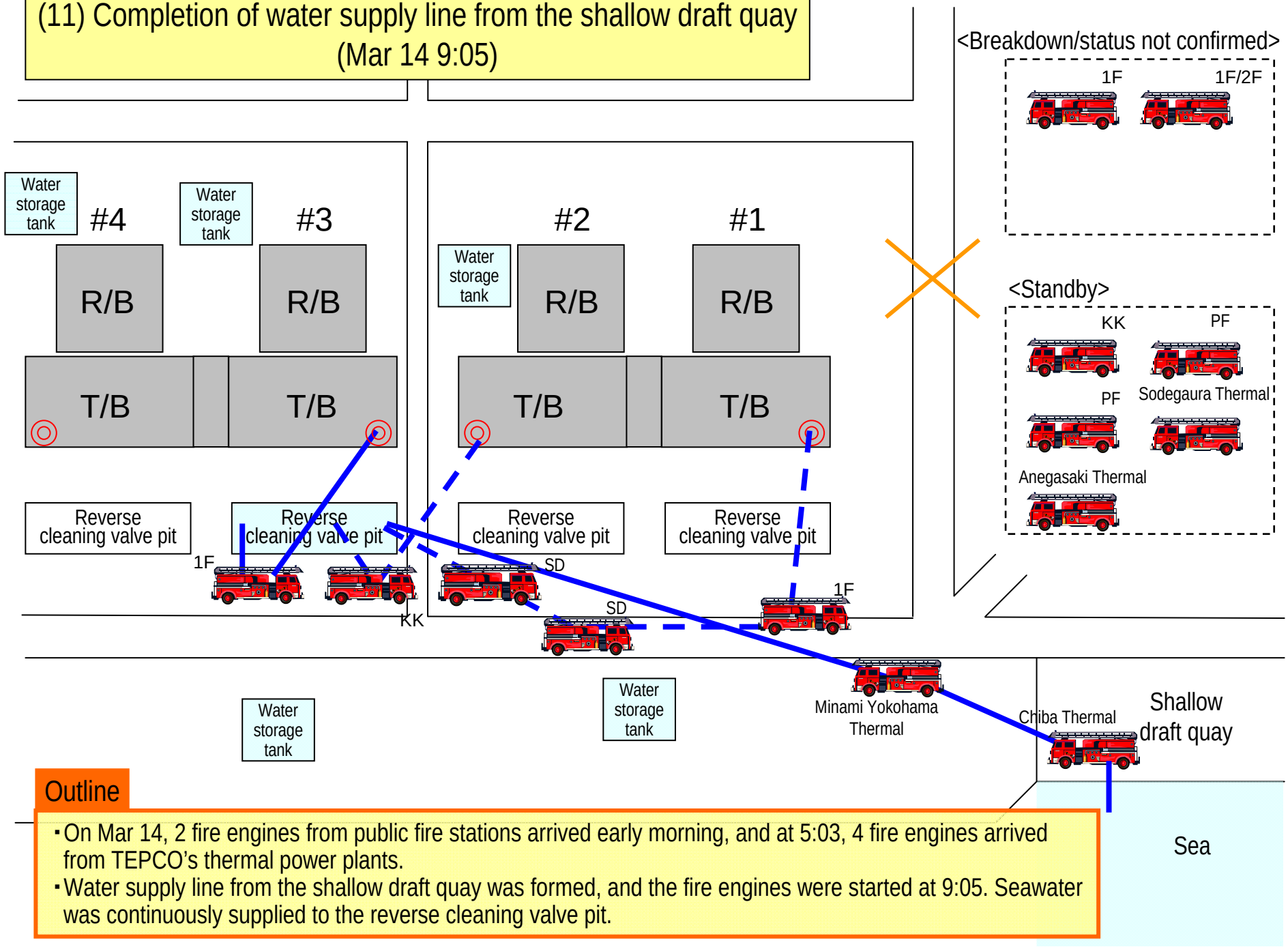
(10) Stop of fire engines / restart of water injection to Unit 3 (Mar 14 1:10/3:20)



Outline

- At 1:10, water injection was stopped due to seawater shortage in the Unit 3 reverse cleaning valve pit.
- At 3:20, seawater became available by adjusting the pumping location of the hose, and water injection to Unit 3 was restarted.

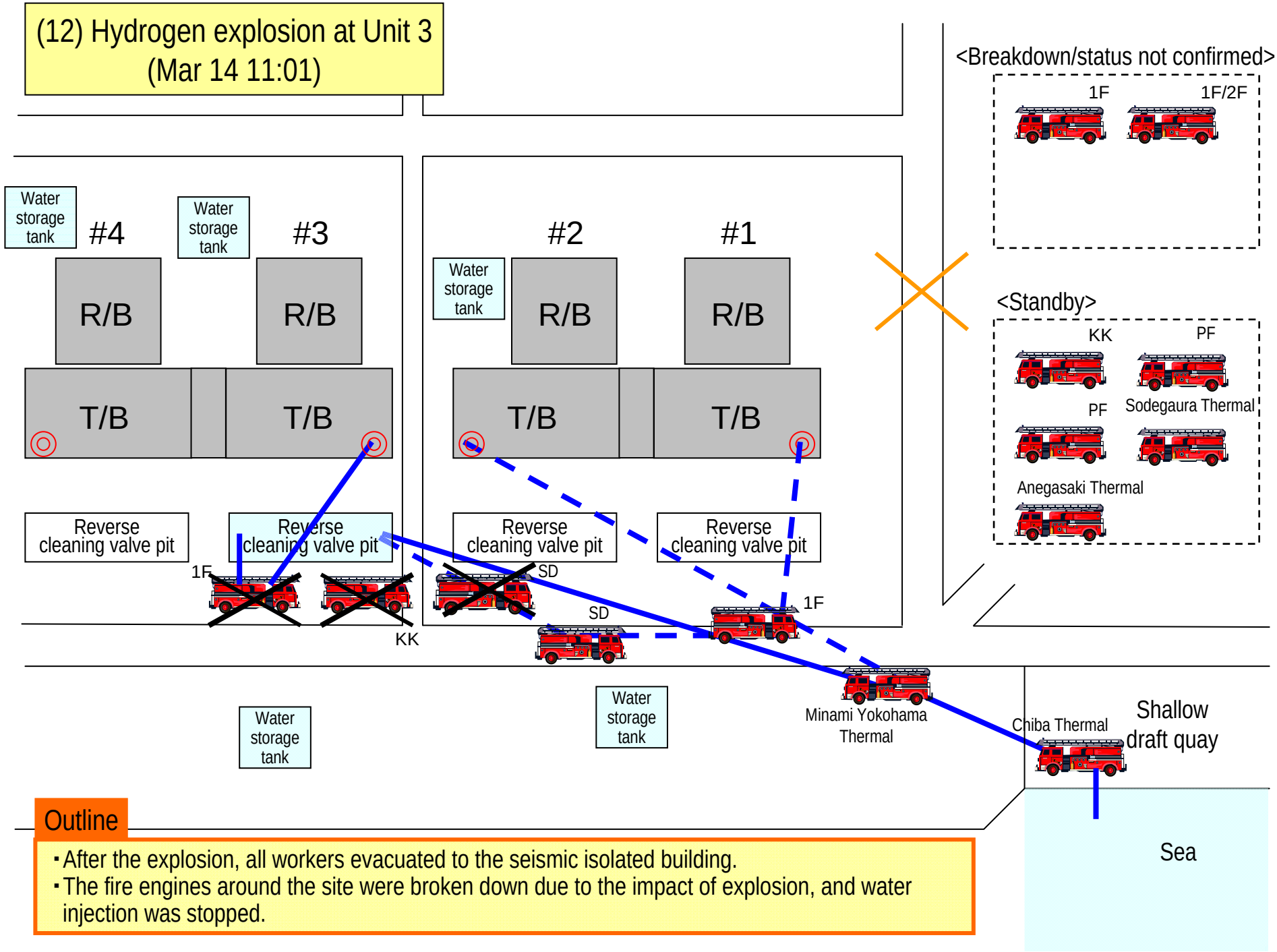
(11) Completion of water supply line from the shallow draft quay (Mar 14 9:05)



Outline

- On Mar 14, 2 fire engines from public fire stations arrived early morning, and at 5:03, 4 fire engines arrived from TEPCO's thermal power plants.
- Water supply line from the shallow draft quay was formed, and the fire engines were started at 9:05. Seawater was continuously supplied to the reverse cleaning valve pit.

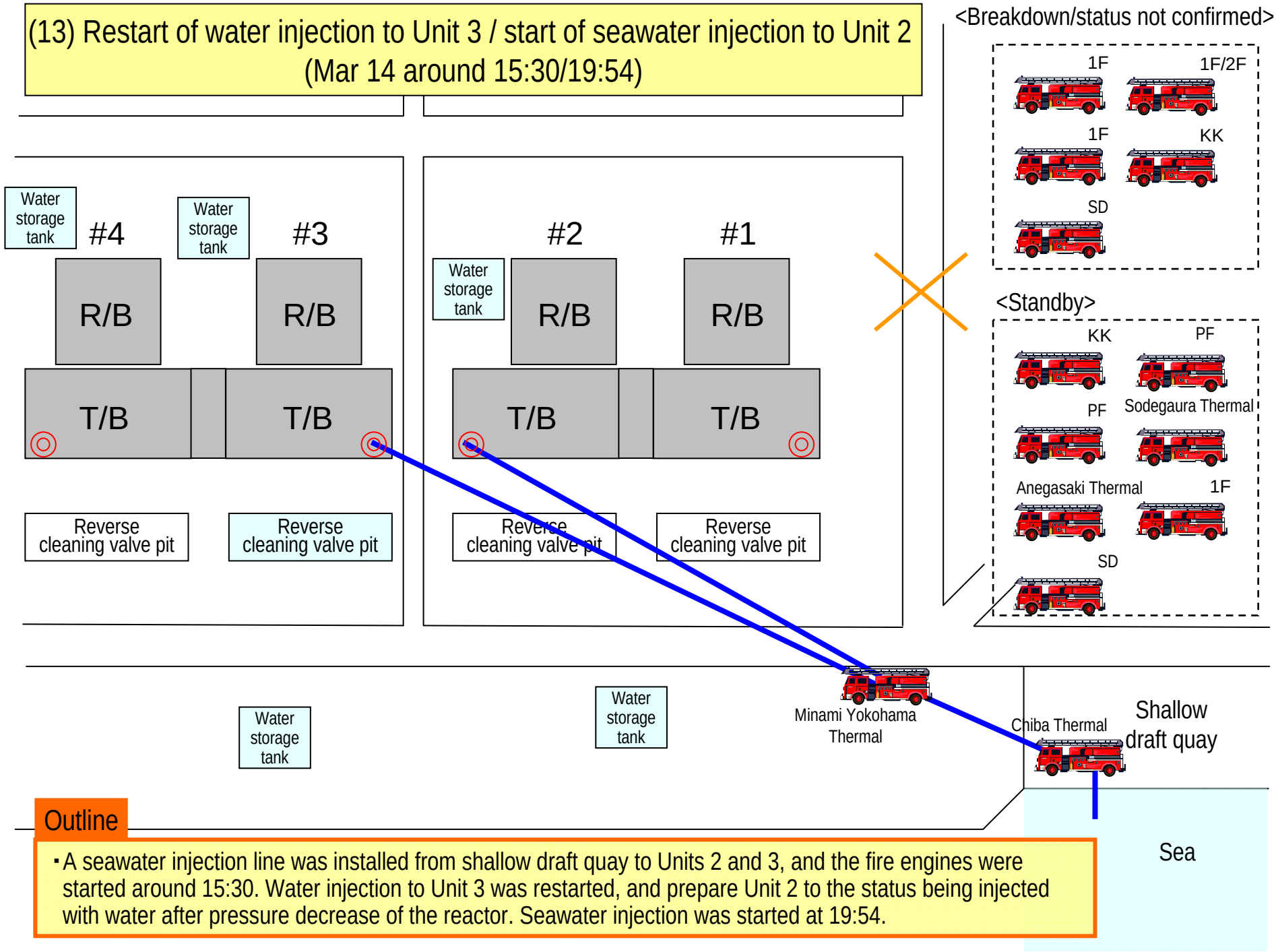
(12) Hydrogen explosion at Unit 3 (Mar 14 11:01)



Outline

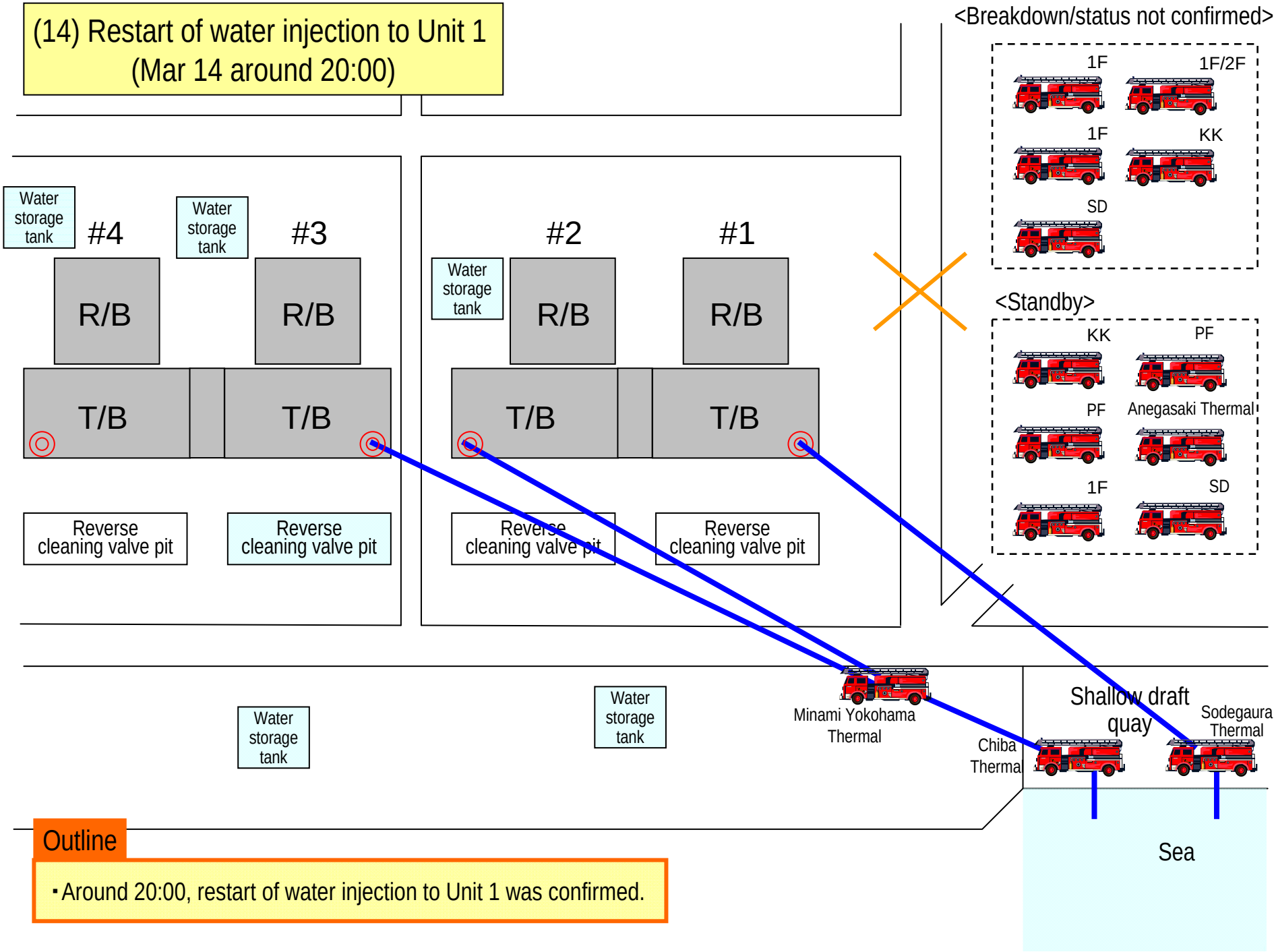
- After the explosion, all workers evacuated to the seismic isolated building.
- The fire engines around the site were broken down due to the impact of explosion, and water injection was stopped.

(13) Restart of water injection to Unit 3 / start of seawater injection to Unit 2 (Mar 14 around 15:30/19:54)

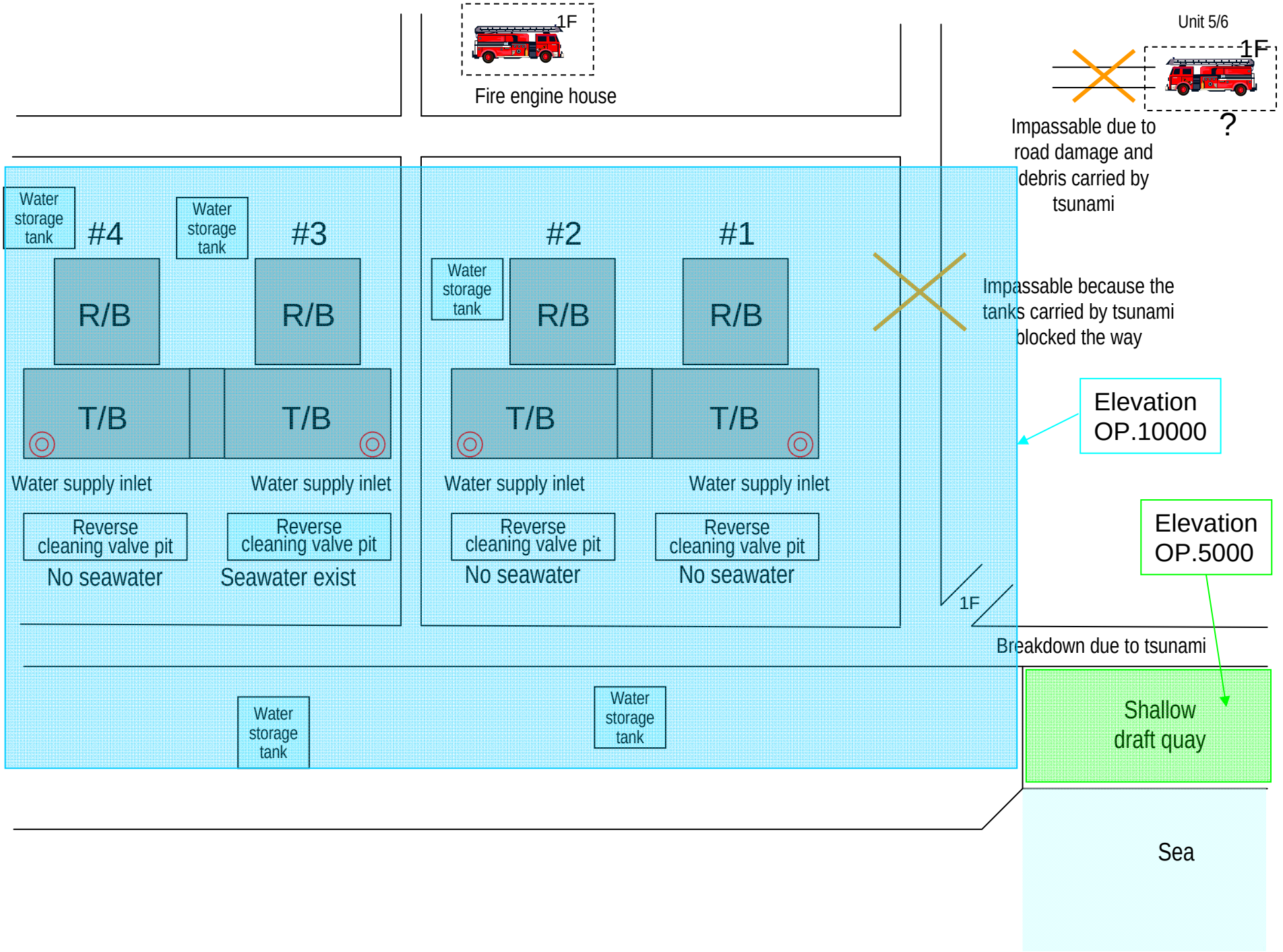


Outline

- A seawater injection line was installed from shallow draft quay to Units 2 and 3, and the fire engines were started around 15:30. Water injection to Unit 3 was restarted, and prepare Unit 2 to the status being injected with water after pressure decrease of the reactor. Seawater injection was started at 19:54.


(14) Restart of water injection to Unit 1
(Mar 14 around 20:00)
<Breakdown/status not confirmed>
1F
1F/2F
1F
KK
SD
<Standby>
KK
PF
PF
Anegasaki Thermal
1F
SD
Water storage tank
#4
Water storage tank
#3
#2
#1
Water storage tank
R/B
R/B
R/B
R/B
T/B
T/B
T/B
T/B
Reverse cleaning valve pit
Reverse cleaning valve pit
Reverse cleaning valve pit
Reverse cleaning valve pit
Water storage tank
Water storage tank
Minami Yokohama Thermal
Shallow draft quay
Sodegaura Thermal
Chiba Therma
Sea
Outline
・Around 20:00, restart of water injection to Unit 1 was confirmed.

Additional Information


1F
Fire engine house
Unit 5/6
1F
?
Impassable due to road damage and debris carried by tsunami
Water storage tank
#4
Water storage tank
#3
#2
#1
Water storage tank
R/B
R/B
R/B
R/B
T/B
T/B
T/B
T/B
Impassable because the tanks carried by tsunami blocked the way
Elevation OP.10000
Water supply inlet
Water supply inlet
Water supply inlet
Water supply inlet
Reverse cleaning valve pit
Reverse cleaning valve pit
Reverse cleaning valve pit
Reverse cleaning valve pit
No seawater
Seawater exist
No seawater
No seawater
Elevation OP.5000
1F
Breakdown due to tsunami
Water storage tank
Water storage tank
Shallow draft quay
Sea

[Fire Engine Class]

1F（Fukushima Daiichi Nuclear Power Plant）: A2 Class
SD（Self-Defense Forces）: A2 Class
KK（Kashiwazaki Kariwa Nuclear Power Plant）: A2 Class
Minami Yokohama Thermal Power Plant : A1 Class
Chiba Thermal Power Plant : A1 Class
Sodegaura Thermal Power Plant : A1 Class

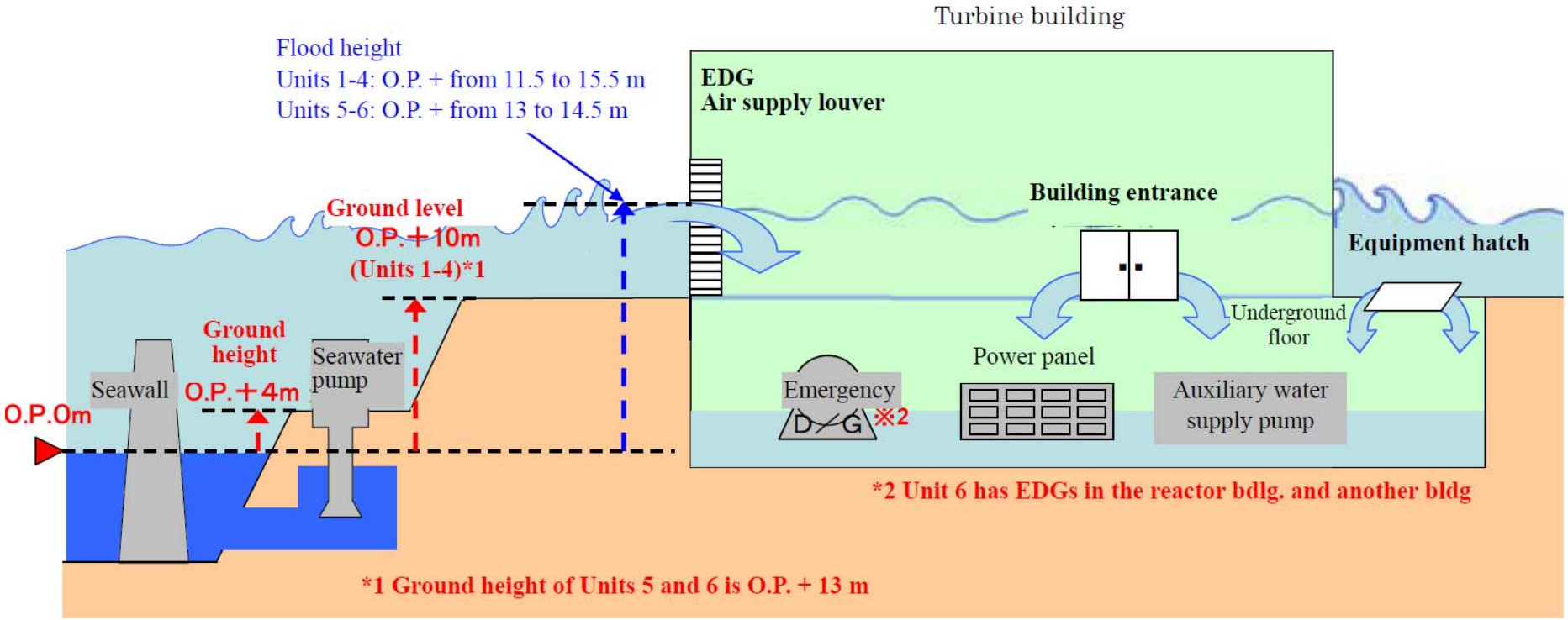
[A1 Class Design Specification]

	Specified discharge pressure	Specified discharge rate
Normal discharge	0.85 MPa	2.8 m^3/min
High pressure discharge	1.4 MPa	2.0 m^3/min

[A2 Class Design Specification]

	Specified discharge pressure	Specified discharge rate
Normal discharge	0.85 MPa	2.0 m^3/min
High pressure discharge	1.4 MPa	1.4 m^3/min

Vertical Section



Fukushima Nuclear Accident Analysis Report (Interim Report) which was released on Dec. 2, 2011