Progress of Landside Impermeable Wall freezing: Phase 1 of the first stage



- OThe purpose of the Landside Impermeable Wall construction lies not in freezing soil to form a underground wall but in keeping groundwater from flowing into the reactor/turbine buildings, which leads the prevention of new contaminated water being generated.
- OBy closing the entire seaside line in Phase 1 of the first stage, it is expected that the flow of groundwater into the bank protection area will be prevented. As a result, the groundwater levels around the buildings will rise and the risks will be reduced of contaminated water leaking from the buildings if the set groundwater levels inside and outside of the buildings are reversed.
- OHow freezing of the Landside Impermeable Wall on the seaside line has progressed will be evaluated by checking the difference in groundwater levels inside and outside of the wall.

Changes in soil temperatures over time

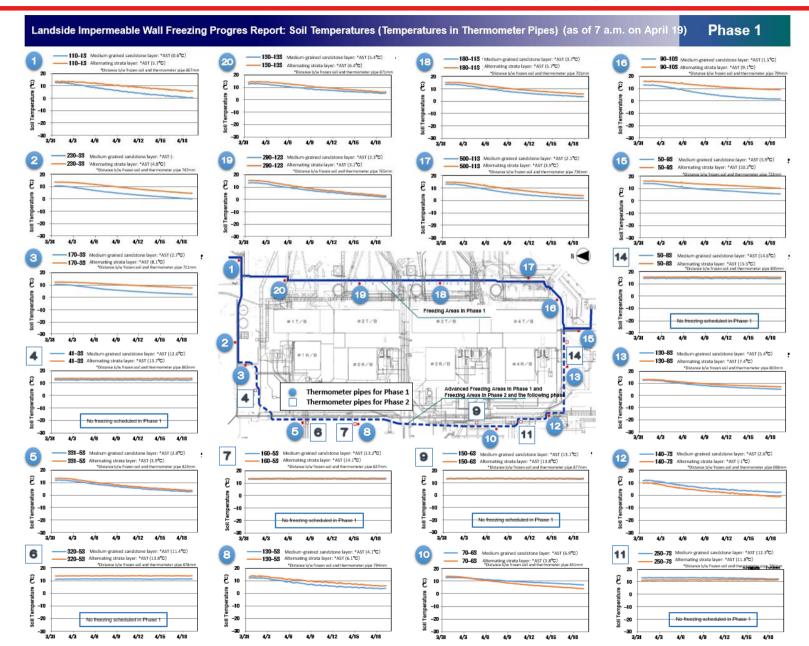
Average Soil Temperature (AST) of medium-grained sandstone layer (blue line):

average value of thermometer temperatures measured at 1m intervals except for the areas between ground surface and Ground Level 2m and the areas around the first muddy layer boarder.

Average Soil Temperature (AST) of alternating strata layer (red line):

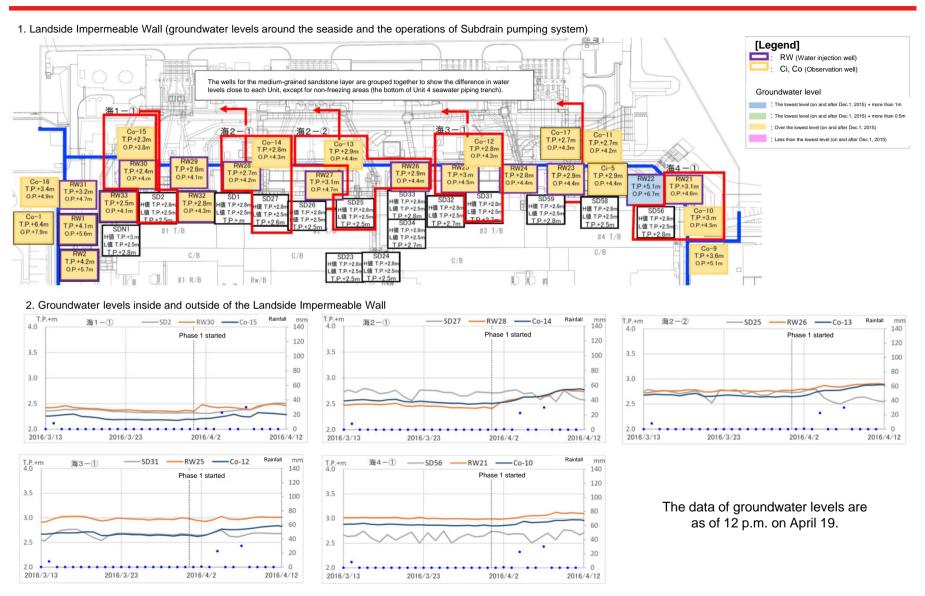
Average value of thermometer temperatures measured at 1m intervals except for the areas around the upper and lower parts of the alternating layer boarder.





Groundwater levels and hydraulic heads (in the medium-grained sandstone layer 1 on the seaside)





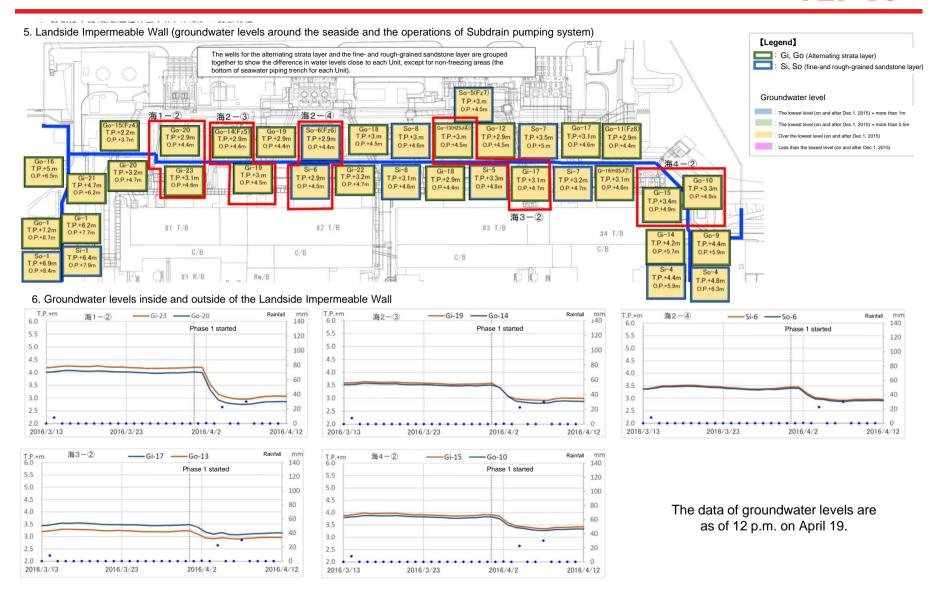
Groundwater levels and hydraulic heads(in the medium-grained sandstone layer 2 on the landside)



3. Landside Impermeable Wall (groundwater levels around the seaside and the operations of Subdrain pumping system) [Legend] The wells for the medium-grained sandstone layer are grouped H値 T.P.+2.8r together to include two wells outside the non-freezing area and one L値 T.P.+2.7.5r T.P.+2.8m RW (Water injection well) H値 T.P.+2.8r L値 T.P.+2.5r T.P.+2.5m L值 T.P.+2.5r well inside, for each Unit. T.P.+2.6m : Ci, Co (Medium-grained sandstone layer) #1 T/B L值 T.P.+2.5 C/B Groundwater level H値 T.P.+3. i值 TP+33 T.P.+5.5r 值 T.P.+2.5r 值 T.P.+2.7.5 H値 T.P.+2.8 Landside Subdrain the lowest level + more than 2m SDN13 T.P.+5.m L值 T.P.+2.5n H値 T.P.+2.8r L値 T.P.+2.5r I 値 TP+275 L值 T.P.+2.5 H値 T.P.+3. . Landside Subdrain the lowest level + more than 1m H値 TP+28 T.P.+4.m Rw/B H値 T.P.+3.1 L値 T.P.+2.7.1 L值 T.P.+2.5 TD+5 m T.P.+5.9m * Landside Subdrain less than the lowest level H値 T.P.+2.8m H値 T.P.+3 I 値 TP+275 H値 TP+3 4値 T.P.+2.8 Ci-2 T.P.+5.6n L値 TP.+2 L値 T.P.+2.5 L値 T.P.+2 L值 T.P.+2.5n L値 T.P.+2.5r H値 T.P.+3.r L値 T.P.+2.5r H値 T.P.+3 O.P.+7.1n T.P.+5.6m L値 T.P.+2.5 T.P.+5.3m TP+52m 0 P+6 7m T.P.+6.5m T.P.+6.3m T.P.+6.1m O.P.+7.6m T.P.+7.1m T.P.+6.6n T.P.+6.3m O.P.+8.m T.P.+6.4m TP+5.1m Co-3D Co-4D T.P.+6.2m TP+64m T.P.+8.m Co-6D O.P.+7.7m O.P.+7.9m O.P.+8.1m T.P.+6.7m O.P.+7.2m O.P.+8.2m 山2-① 山3-① 4. Groundwater levels inside and outside of the Landside Impermeable Wall ш1-① — Co-4D — Co-3D — RW5 山2-① 山3-(1) —___Co-4D _____RW8 ——Co-5D ——Co-6D 8.0 8.0 8.0 120 120 120 100 100 100 7.0 7.0 7.0 80 80 6.0 6.0 6.0 60 60 60 40 40 40 5.0 5.0 5.0 20 20 20 Phase 1 started Phase 1 started Phase 1 started 40 2016/3/13 2016/3/23 2016/4/2 2016/4/12 2016/3/23 2016/4/12 2016/3/13 2016/3/23 2016/4/2 2016/4/12 T.P.+m Ш4-(1) Rainfall mm Co-6D Co-7D ---RW16 140 8.0 120 100 7.0 The data of groundwater levels are as of 12 p.m. on April 19. 80 6.0 60 40 5.0 20 Phase 1 started 2016/3/23 2016/4/2

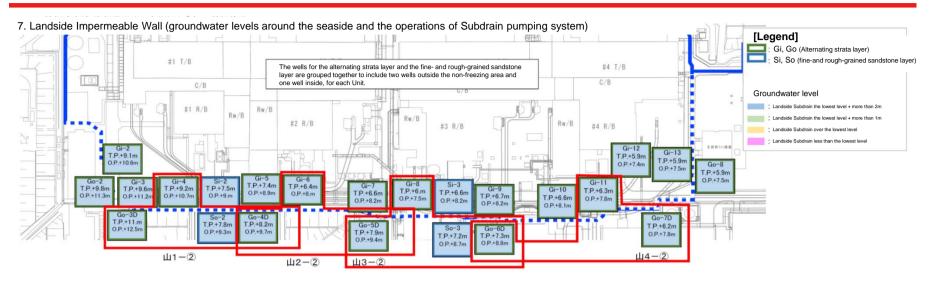
Groundwater levels and hydraulic heads

(in the alternating strata layer and the fine- and rough-grained sandstone layer 1 on the seaside)



Groundwater levels and hydraulic heads

(in the alternating strata layer and the fine- and rough-grained sandstone layer 1 on the seaside)



8. Groundwater levels inside and outside of the Landside Impermeable Wall

2016/4/2

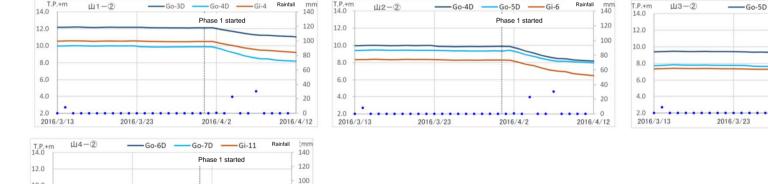
10.0

8.0

4.0

2016/3/13

2016/3/23



80

60 40

2016/4/12

The data of groundwater levels are as of 12 p.m. on April 19.

140

120

100

80

20

2016/4/12

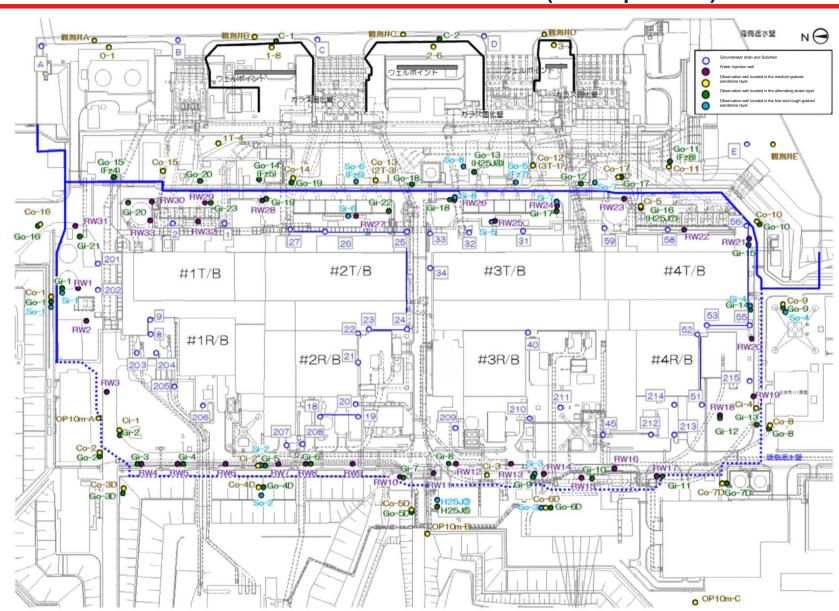
-Go-6D

Phase 1 started

2016/4/2

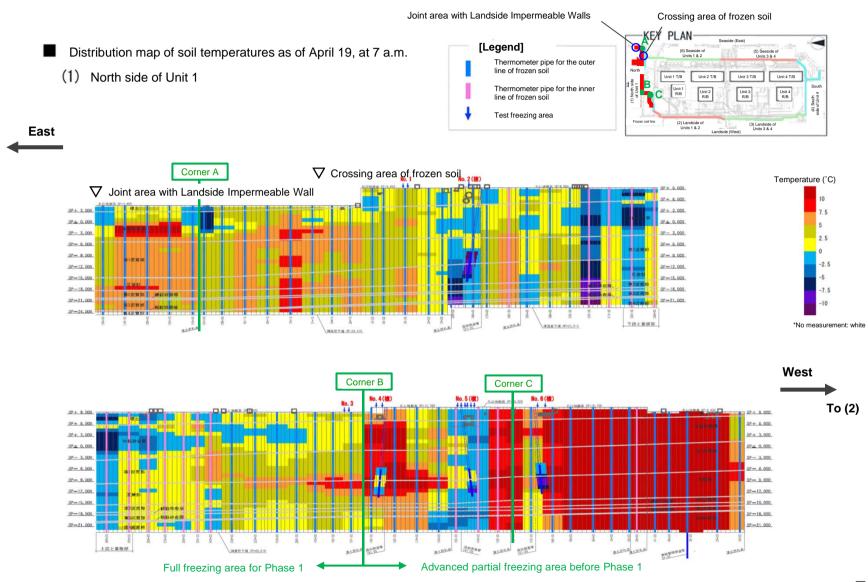
[Reference] Location map of groundwater level observation wells (as of April 2016)





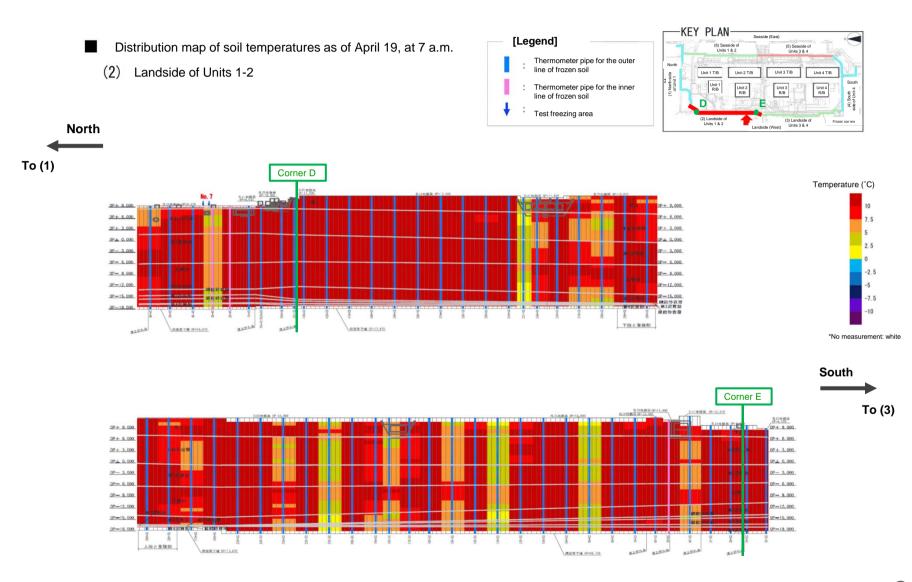
[Reference] Distribution map of soil temperatures* (north side of Unit 1)





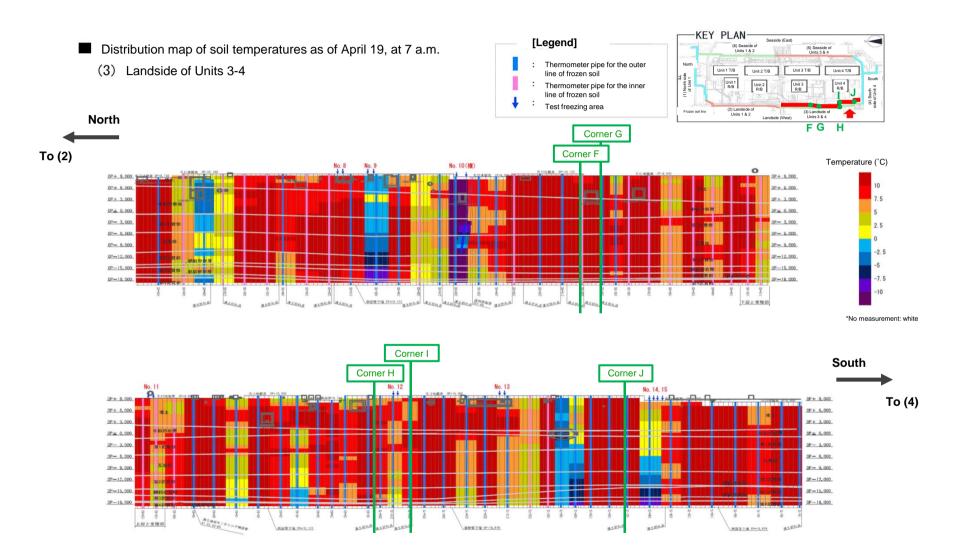
[Reference] Distribution map of soil temperatures (west side of Units 1-2)





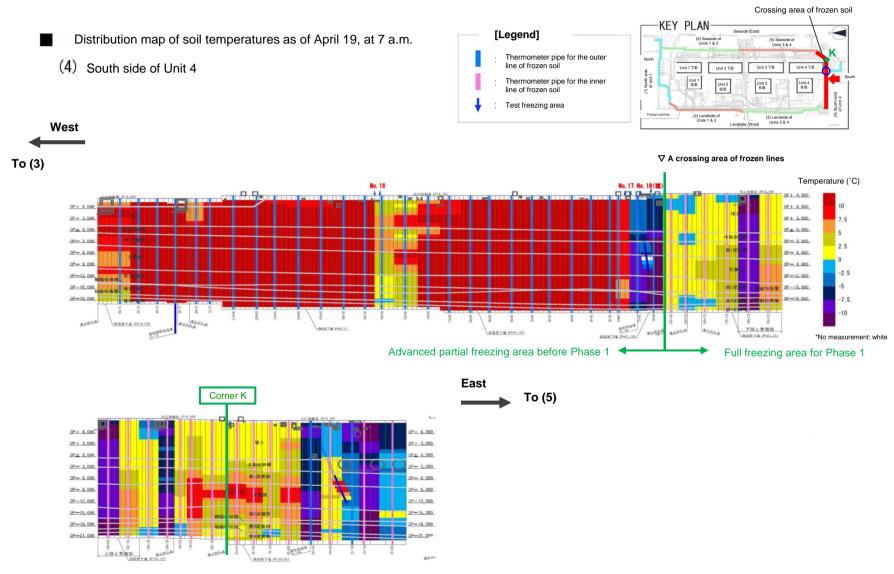
[Reference] Distribution map of soil temperatures (west side of Units 3-4)





[Reference] Distribution map of soil temperatures (south side of Unit 4 (1))



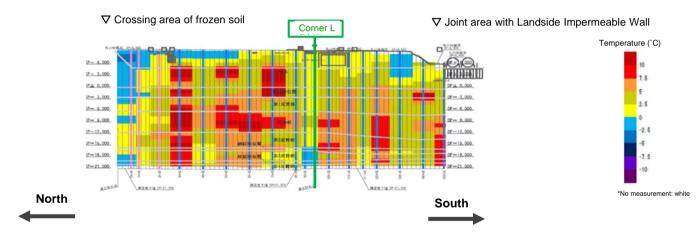


[Reference] Distribution map of soil temperatures (south side of Unit 4, joint area with Seaside Impermeable Wall) T = CO



- Distribution map of soil temperatures as of April 19, at 7 a.m.
 - (4) Landside of Units 3-4





[Reference] Distribution map of soil temperatures (east side of Units 3-4)



-KEY PLAN-Distribution map of soil temperatures as of April 19, at 7 a.m. [Legend] Thermometer pipe for the outer (5) South side of Unit 4 line of frozen soil Thermometer pipe for the inner Unit 1 R/B line of frozen soil Test freezing area North Temperature (°C) To (6) OP- 3.000 0P-12,000 OP-15,000 -7.5 South OP+ 9,000 To (4) OP± 0,000 OP- 3,000 OP- 9,000 0P-12,000 OP-12,000 00-15,000 OP-15,000 0P-21,000 OP-21,000 OP-24, 000

[Reference] Distribution map of soil temperatures (east side of Units 1-2)



