Plan Towards a Full-Scale Operation of the Multi-Nuclide Removal Facility (ALPS)

July 31, 2014

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1. Overview of the approach towards full-scale operation

■Approach towards full-scale operation

The multi-nuclide removal facility (ALPS) will begin full-scale operation after confirmed to be able to steadily reduce the risk of the RO concentrated water.

Challenges towards full-scale operation are as follows.

-Challenge 1: Bringing four nuclides (Co-60, I-129, Sb-125, Ru-106) down to within regulatory limits

→Test results so far have shown that these nuclides could be removed by changing adsorption materials or installing additional adsorption towers.

-Challenge 2: Applying to the pre-operation test

Response towards JSME etc. has not been implemented, and necessary paper to take pre-operation checks such as weld examination is not ready yet as the ALPS is stated as an equipment installed for emergency.

→Records are examined to get compatibility checks from JSME etc.

-Challenge 3: Addressing the issues towards full-scale operation (in response to the nuclear regulatory meeting held on March 19, 2013)

- Reducing workers' exposure to radiation

→Radiation dose is reduced through monitoring and shielding etc.

- Lowering radiation dose around the site boundary

→Radiation dose is reduced through shielding, and evaluation is reviewed according to the property of the radioactive liquid stored.

Storage facilities are updated to more high shielding type.

- Managing water storage

→Tanks are managed in the overall plan to install tanks which is reported on a half-period basis.

2. Test results for the four remaining nuclides

Test results

- Tests to improve removal capability of the 4 nuclides (Co-60, I-129, Sb-125, Ru-106) are ongoing, as the four out of 62 nuclides are still detected slightly higher than the notification level.
- By installing two adsorption towers and changing adsorption materials, it has been proved to remove them to below notification level.

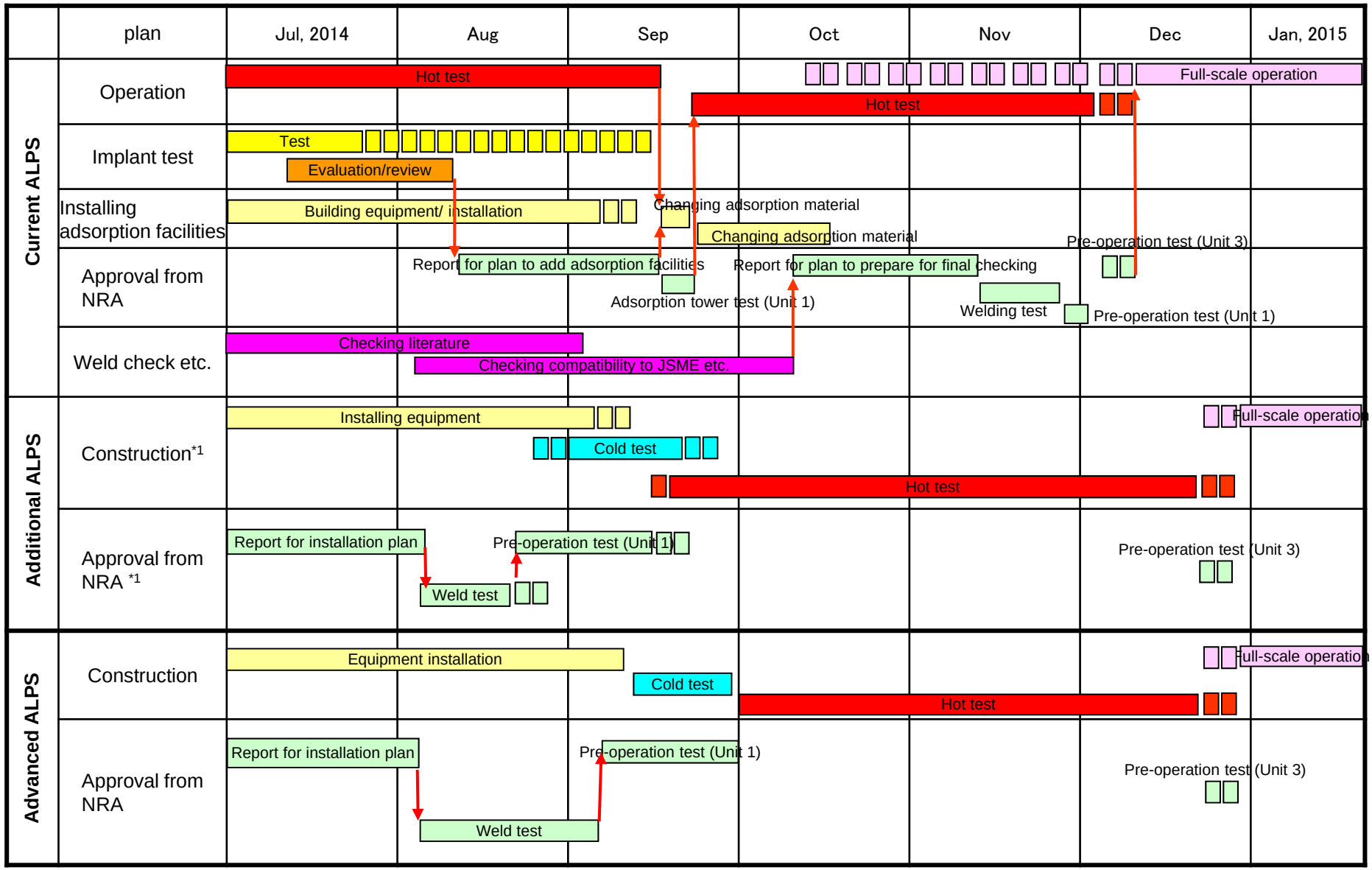
Type of nuclide	Test period	Density proportion compared to notification level	Notification level (Bq/L)
Co-60	Approx. 37 days	0.005	2.0E+02
I-129	Approx. 23 days *1 Approx. 54 days	0.057 0.65	9.0E+00
Sb-125	Approx. 36 days	0.004	8.0E+02
	Approx. 56 days*2	0.008	
Ru-106	Approx. 33 days*3	0.099	1.0E+02

*1 has been confirmed to go down to 0.5 after 25 days. *2 New adsorption material which substitutes current Sb adsorption material.
*3 Life period currently confirmed.

Future plan

- System to build the adsorption facility will be designed on the basis of the test results.
- The installation of the adsorption towers and the change of adsorption material will be reflected to the plan which will be reported to the regulator, and after installation, checked if it could meet the target level.
- Removal capability during operation will be managed so that the treated water will not affect the radiation dose around the site boundary (below 1mSv/year).

Future plan



* The schedule is due to change according to the progress of construction etc. *1 The schedule is different among the three units (A to C).

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