

# Current Status of Roadmap (issues/targets/major countermeasures) as of May 17

Red colored: newly added to the previous version, Blue colored: modified from the previous version

Issues	As of April 17	Step I (around 3 months) ▼ current status (as of May 17)	Step II (around 3 to 6 months after achieving Step I)	Mid-term issues	
I. Cooling	(1) Reactor Fresh water Injection	<p>Cooling by minimum injection rate (injection cooling)</p> <p>Consideration and preparation of reuse of accumulated water</p> <p>Nitrogen gas injection</p> <p>Consideration and implementation of sealing measure at leaking points of PCV</p> <p>Improvement of work environment</p> <p>Securing heat exchange function</p>	<p>Stable cooling</p> <p>Establishment of Circulating Injection Cooling</p> <p>PCV flooding</p> <p>Cold shutdown</p>	<p>Protection against corrosion cracking of structural materials</p> <p>*to be partially implemented ahead of schedule</p>	
	(2) Spent Fuel Pool Fresh water injection	<p>Reliability improvement in injection operation /remote-control operation *ahead of schedule</p> <p>Circulation cooling system (installation of heat exchanger) *partially ahead of schedule</p>	<p>Stable cooling</p> <p>Remote-controlled injection operation</p> <p>Consideration/installation of heat exchanging function</p> <p>More stable cooling</p>	<p>Removal of fuels</p>	
II. Mitigation	(3) Accumulated Water Transferring water with high radiation level Storing water with low radiation level	<p>Installation of storage / processing facilities</p>	<p>Secure storage place</p>	<p>Expansion of storage / processing facilities</p> <p>Decontamination / Desalt processing (reuse), etc</p> <p>Reduction of total amount of contaminated water</p>	<p>Installation of full-fledged water processing facilities</p> <p><b>Completion of processing of accumulated water in buildings</b></p> <p>Mitigation of contamination in the ocean (continued)</p>
		<p>Installation of storage facilities / decontamination processing</p>	<p>Mitigation of contamination in the ocean</p>	<p>Mitigation of total amount of contaminated water</p>	<p>Mitigation of contamination in the ocean (continued)</p>
	(4) Ground water	<p>Mitigation of contamination of groundwater (Sub-drainage management with expansion of storage / processing facilities)</p> <p>Consideration of shielding method of groundwater</p>			<p>Solidification of contaminated soil, etc</p> <p><b>Establishment of groundwater shielding</b></p>
	(5) Atmosphere / Soil	<p>Dispersion of inhibitor</p> <p>Removal of debris</p> <p>Installing reactor building cover (with ventilation system)</p>			<p>Installation of reactor building cover</p>

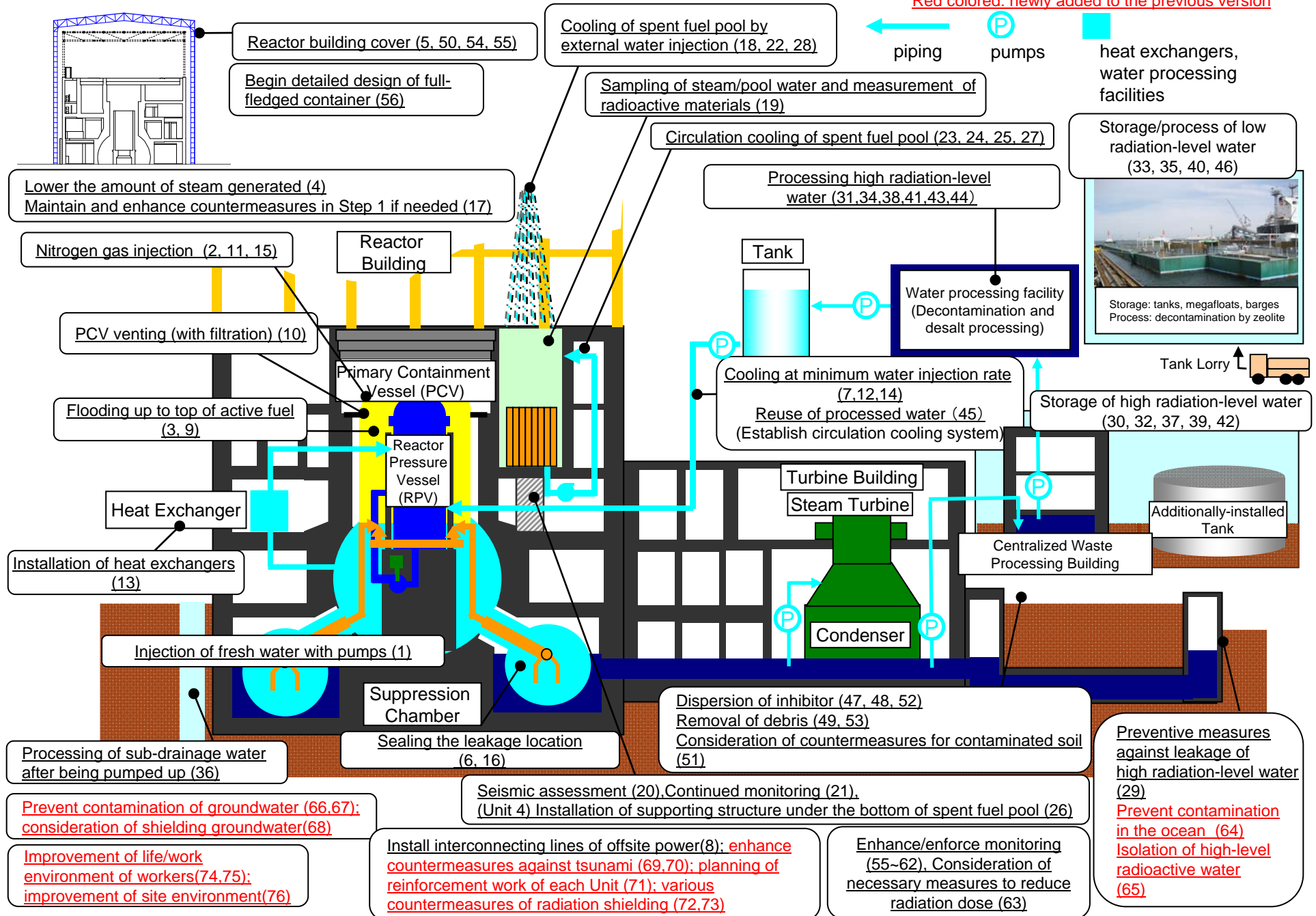
# Current Status of Roadmap (issues/targets/major countermeasures) as of May 17

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Issues		As of April 17	Step I (around 3 months) ▼ current status (as of May 17)	Step II (around 3 to 6 months after achieving Step I)	Mid-term issues
III. Monitoring/Decontamination	(⊕) Measurement, Reduction and Announcement				
		Expand/ enhance monitoring of radiation dose in and out of the power station and inform of results fast and accurately		Sufficiently reduce radiation dose in evacuation order / Deliberate Evacuation Preparation Area/ Evacuation Preparation Area	Continue monitoring and informing environmental safety
IV. Countermeasures against aftershocks, etc	(⌋) Tsunami, Reinforcement, etc	Enhancement of countermeasures against aftershocks and tsunami; preparation for various countermeasures for radiation shielding			
		(Unit 4 spent fuel pool) Install supporting structure	Consideration /implementation of reinforcement work of each Unit	Reinforcement work of each Unit	
V. Environment improvement	(∞) Life/work environment	Improvement of workers' life/work environment			

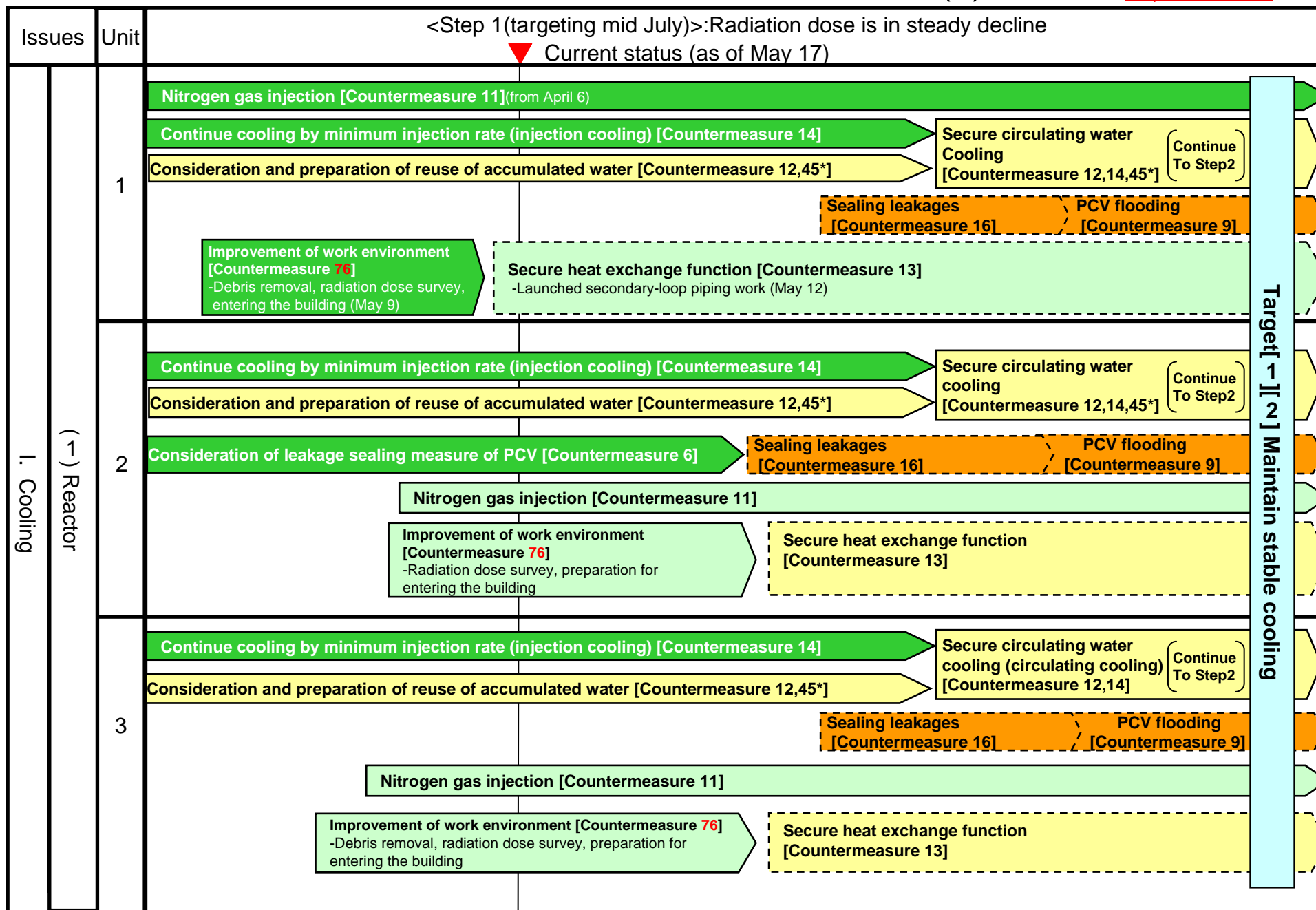
# Overview of Major Countermeasures in the Power Station as of May 17

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# Current Status of Countermeasures (1)

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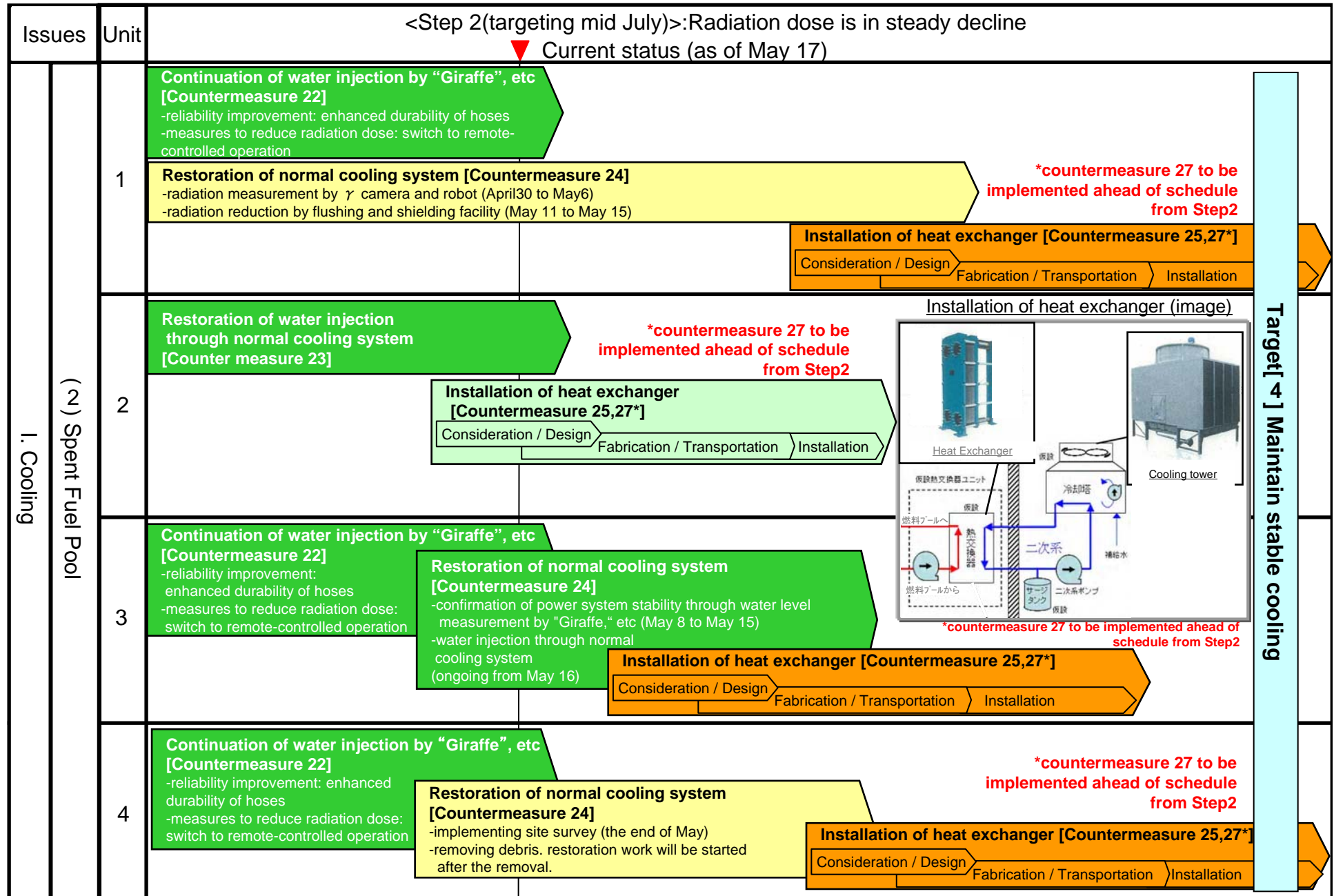
Target [ ] Maintain stable cooling

\*(countermeasure 45 to be implemented ahead of schedule from Step2)

Legend  : Implemented  : Under construction  : Field work started  : Field work not started yet

# Current Status of Countermeasure (2)

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Target [4] Maintain stable cooling

Legend  : Implemented  : Under construction  : Field work started  : Field work not started yet

# Current Status of Countermeasures (3)


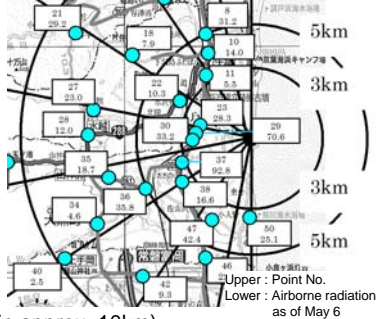

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Issues		<Step 1 (targeting mid July)> : Radiation dose is in steady decline ▼ Current status (as of May 17)	
II. Mitigation	(3) Accumulated Water	<p><b>[ High level ]</b></p> <p><b>Secure sufficient storage place [Countermeasure 37,39]</b> Transfer after waterproof check of centralized Waste Processing Facilities (Process Main Building and High-temperature Incineration Building) Transfer (Unit 2 trench to Process Main Building) Waterproof check etc. (Incineration Building) - Installation of tanks [For receiving processed water] May 10 : approx. 11,000 t</p>	<p><b>Continue to Secure sufficient storage place [Countermeasure 37,39,42*]</b> *(Countermeasure 42 to be implemented ahead of schedule from Step 2) Transfer (from Unit3 Turbine Building to Incineration Building) - Installation of tanks [For receiving processed water] late June : approx. 28,000 t, preparing installation place for underground tanks* (from May 16 to step 2)</p>
		<p><b>Mitigation of contamination in the ocean [Countermeasure 64]</b> - Installation of silt fence</p>	<p><b>Continuing mitigation of contamination in the ocean [Countermeasure 64]</b> - Installation of circulating decontamination system (end of May), Installation of steel sheet pile (to Step 2)</p>
		<p><b>Isolation of high-level radioactive Water [Countermeasure 65]</b> - Closing of Unit 2 &amp; 3 Turbine trenches (end of May)</p>	
		<p><b>Installation of water processing facilities [Countermeasure 38]</b> Consideration / Design → Manufacturing / Transportation → Installation of decontamination / salinity processing equipment</p>	<p><b>Continuing water processing of contaminated water [Countermeasure 38,43, 45*]</b> Middle of June: processing start Test Operation → Operation: processed water to be reused (to Step 2) *(Countermeasure 43, 45 to be implemented ahead of schedule from Step 2)</p>
		<p>Underground Tank</p> 	<p>Receiving tank for processed water</p> 
		<p>Installation of decontamination equipment</p> 	<p>Mega float</p> 
			<p>Water processing by zeolite</p> 
		<p><b>[ Low level ]</b></p> <p><b>Increase storage capacity / decontamination [Countermeasure 40,41]</b> Installation of tanks ( May 8 : 2,200 t ) - Use of decontaminant (zeolite) : test operation (from May 3)</p>	<p><b>Continue to increase storage capacity / decontamination [Countermeasure 40,41]</b> - Installation of tanks (mid May : 6,200t, late May : 6,400 t, early June : 3,600 t ), Mega float (late May : 10,000 t ), barges (late June : 1,200 t and 1,000 t ) - Start of full operation of decontaminant (zeolite) (from late May)</p>
Groundwater	(4)	<p><b>Consideration of mitigation of groundwater contamination [Countermeasure 66]</b></p>	<p><b>Implementation of mitigation of groundwater contamination [Countermeasure 67]</b> Restoration of subdrain pumps (middle of June) Subdrain management with expansion of storage / processing facilities (to Step 2)</p>
			<p><b>Consideration of groundwater shielding method [Countermeasure 68] (to Step 2)</b></p>

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# Current Status of Countermeasures (4)

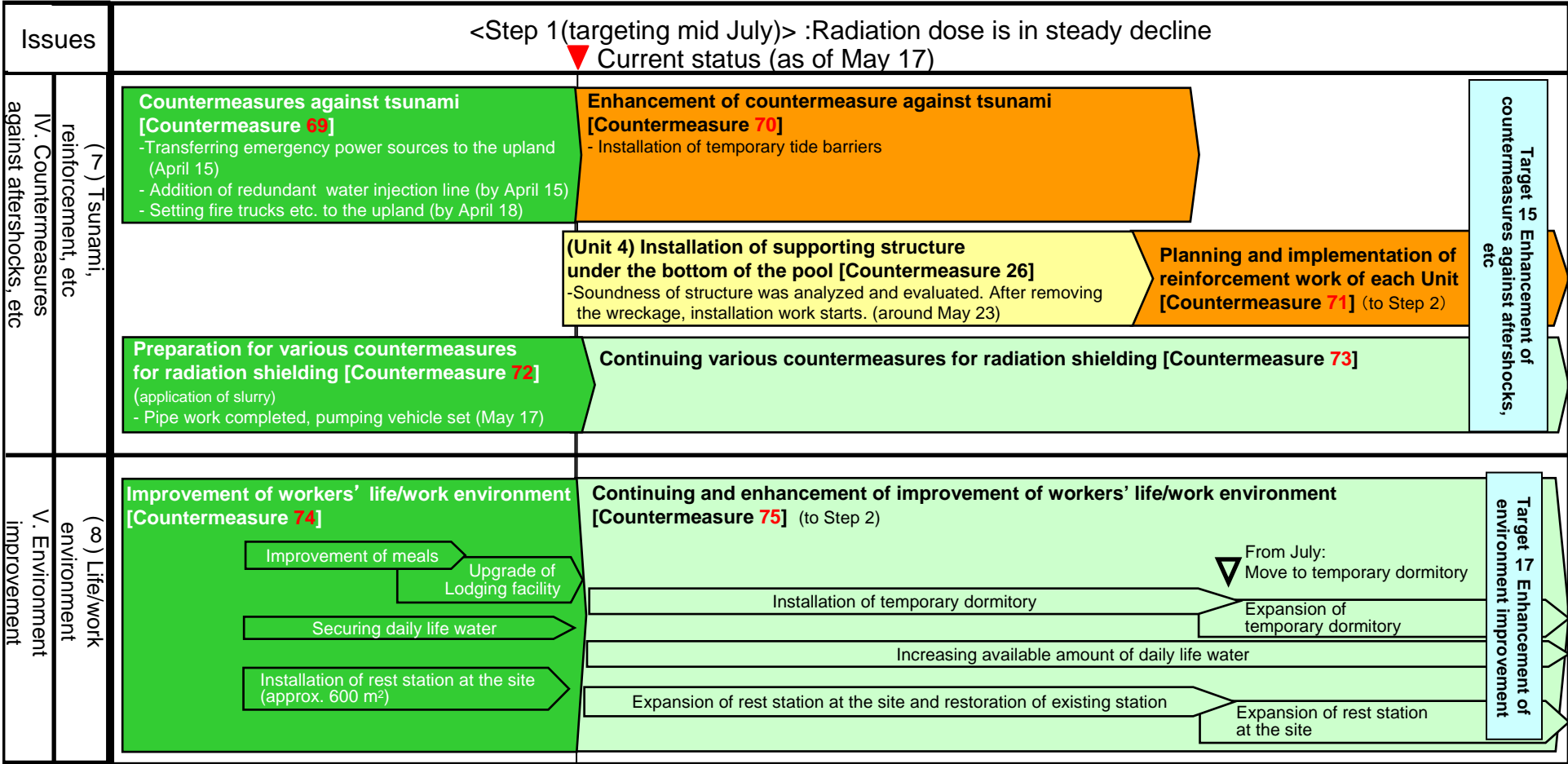
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Issues		<Step 1(targeting mid July)> :Radiation dose is in steady decline ▼ Current status (as of May 17)		
II. Mitigation	(㊦) Atmosphere / Soil	<b>Dispersion of inhibitor [Countermeasure 52]</b> - Plane and slope : approx. 105,000 m <sup>2</sup> (May 12) - Around Units 1 to 4 : approx. 49,000 m <sup>2</sup> (May 12)	<b>Continuing dispersion of inhibitor [Countermeasure 52](to step2)</b> - Plane and slope : approx. 420,000 m <sup>2</sup> (until late June) - Around Units 1 to 4 : approx. 120,000 m <sup>2</sup> (until late May)	 Target [㊦] Prevent scattering of radioactive materials
		<b>Removal of debris [Countermeasure 53] (from April 6)</b> - Removal of debris (equivalent of 127 containers with approx. 4 m <sup>3</sup> volume) (May 10)		
		<b>Installing reactor building cover [Countermeasure 54]</b> -Unit 1 : Started preparation construction work (from May 13) Design → Procurement, Manufacturing → On-site construction (including preparation) (to Step 2) -Units 3 & 4 : Now designing (to Step 2)		
III. Monitoring/Decontamination	(㊦) Measurement, Reduction and Announcement	<b>Expand/enhance monitoring and announcement [countermeasure 60,61]</b> -Continue monitoring in and out of the power station		Target [㊦] Expand/enhance monitoring etc.
<b>[Land Area]</b> - Monitoring within 20km radius of the periphery: (1) Monitoring of airborne radiation at 128 points, and dust concentration at 12 points by the collaboration between MEXT, Power Support Team and TEPCO (April 18) (2) Monitoring of airborne radiation at 50 points by Power Support Team (from May 6, weekly) - Monitoring at 5 points between 3 and 5 km radius of the periphery at the timing of entry in the building of Unit 1 (open the airlock) (May 8,9) (Map on the right indicates the collecting points within approx. 10km)		 Upper : Point No. Lower : Airborne radiation as of May 6	<b>[Ocean Area]</b> -Start monitoring sea water at 22 points (from May 5) and marine soil at 2 points (from April 29) off the coast of Fukushima (Increased from sea water at 16 points (as of April 17)) -Start monitoring sea water at 5 points off the coast of Ibaraki (from April 29) (Map on the right indicates the collecting points within approx. 30km)	 ● :Sea water collecting points ● :Sea water and marine soil collecting points

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# Current Status of Countermeasures (5)

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