

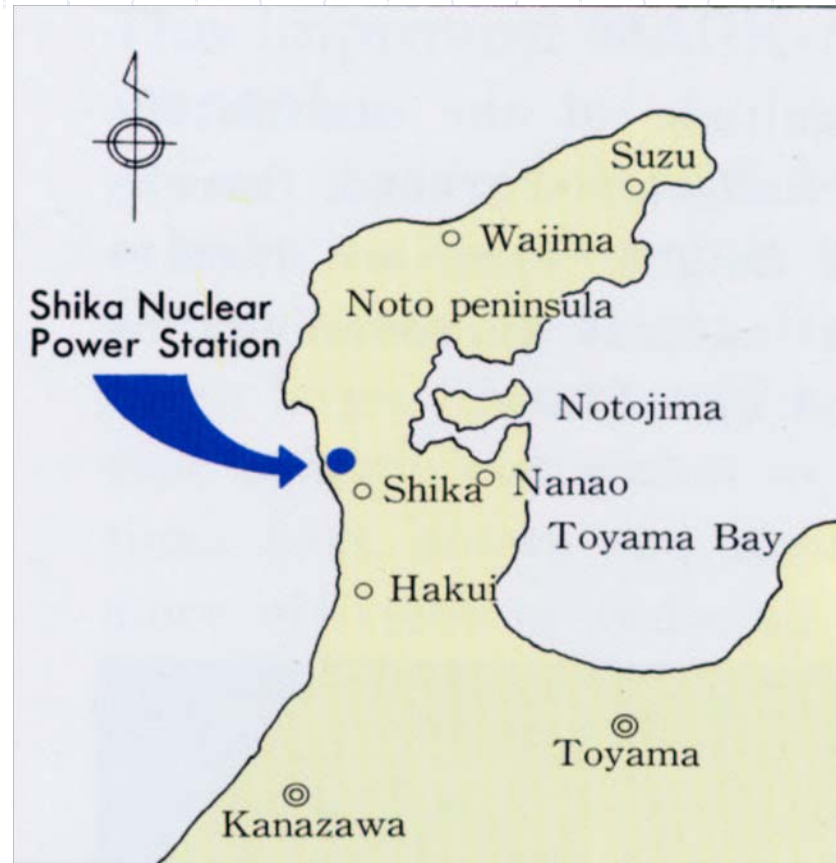
Management of Occupational Exposure Dose using Entrance/Exit Processing System in Shika Nuclear Power Station

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Location of Shika Nuclear Power Station



Specification of Unit 1 & Unit 2

Unit	Unit 1	Unit 2
Reactor type	BWR-5	ABWR
Electric power (MWe)	540	1358 ※
Start of commercial operation	July, 1993	March, 2006
Feedwater flow rate (t/h)	3070	7600
Condensate polishing system	filter + demineralizer (hollow fiber filter)	
RWCU flow rate (t/h)	64	154 (2% of feedwater flow rate)

※ electric power is 1206MWe under operations using current plates

Contents

◆ Dose management at the Shika Nuclear Power Station

- Measurement of exposure dose
- Individual dose management
- Work dose management

◆ Features of the entrance/exit processing system at the Shika Nuclear Power Station

Measurement of exposure dose in Shika

External exposure

Glass Badge (GB)

Measurement frequency
Every month



Alarm Pocket Dosimeter (APD)

Measurement frequency
Everyday



Evaluation

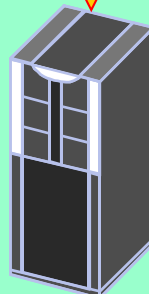
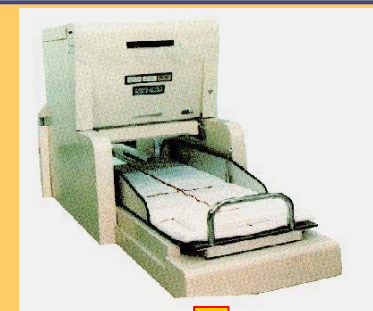
Internal exposure

Whole Body Counter (WBC)

Measurement frequency

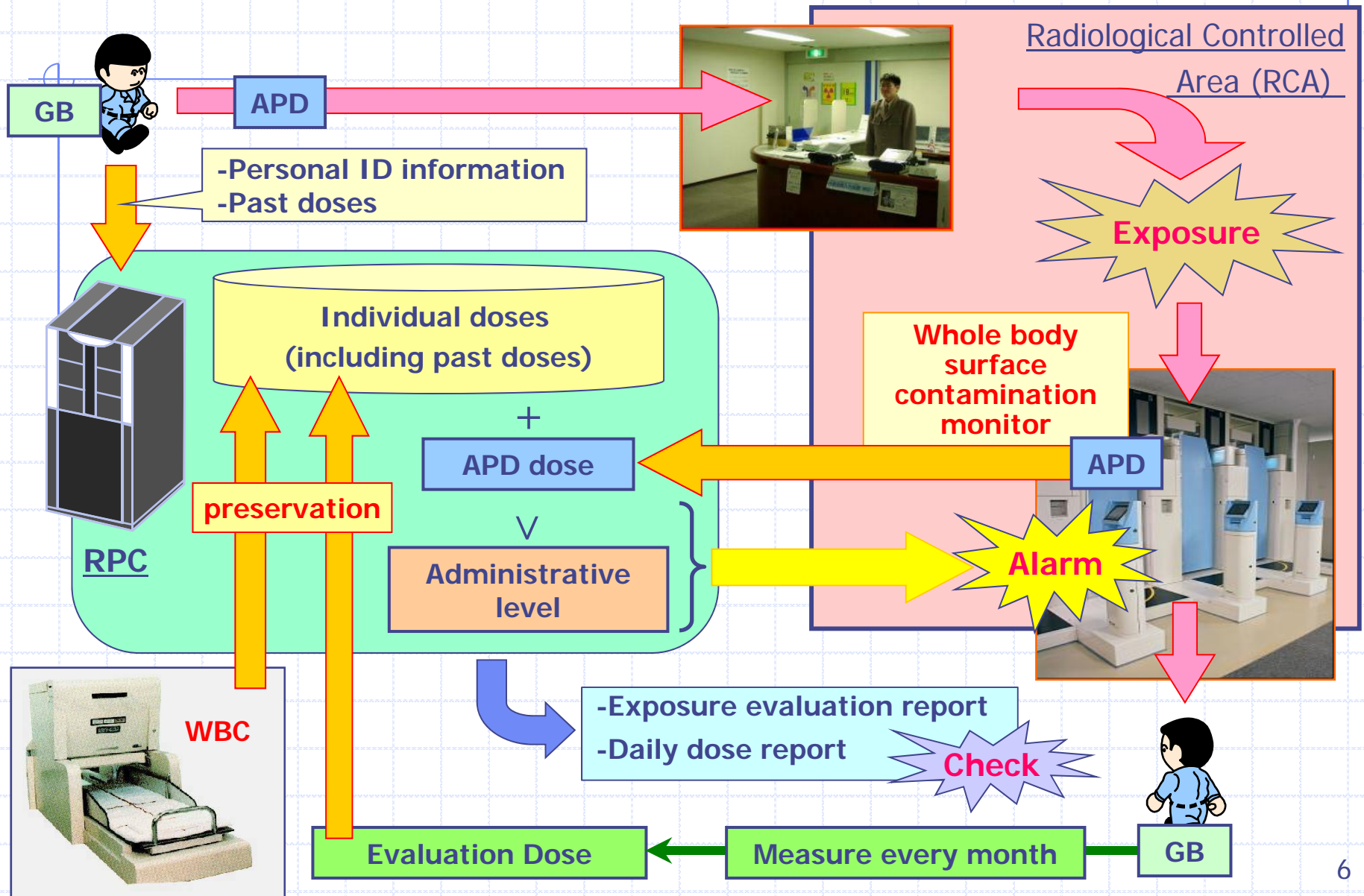
-Male: **Every three months**

-Female: **Every month**



Radiation Protection Computer System (RPC)

Tracking exposure dose in Shika



Work dose management

《 Plan 》

- Establish measures (exposure reduction measures) to keep the workers' dose as low as rationally achievable
- Establish a planned dose based on the radiation environment of the workplace
- Set the APD alarm level

《 Action 》

- Review the calculation method of the planned dose
- Review the exposure reduction measures

《 Do 》

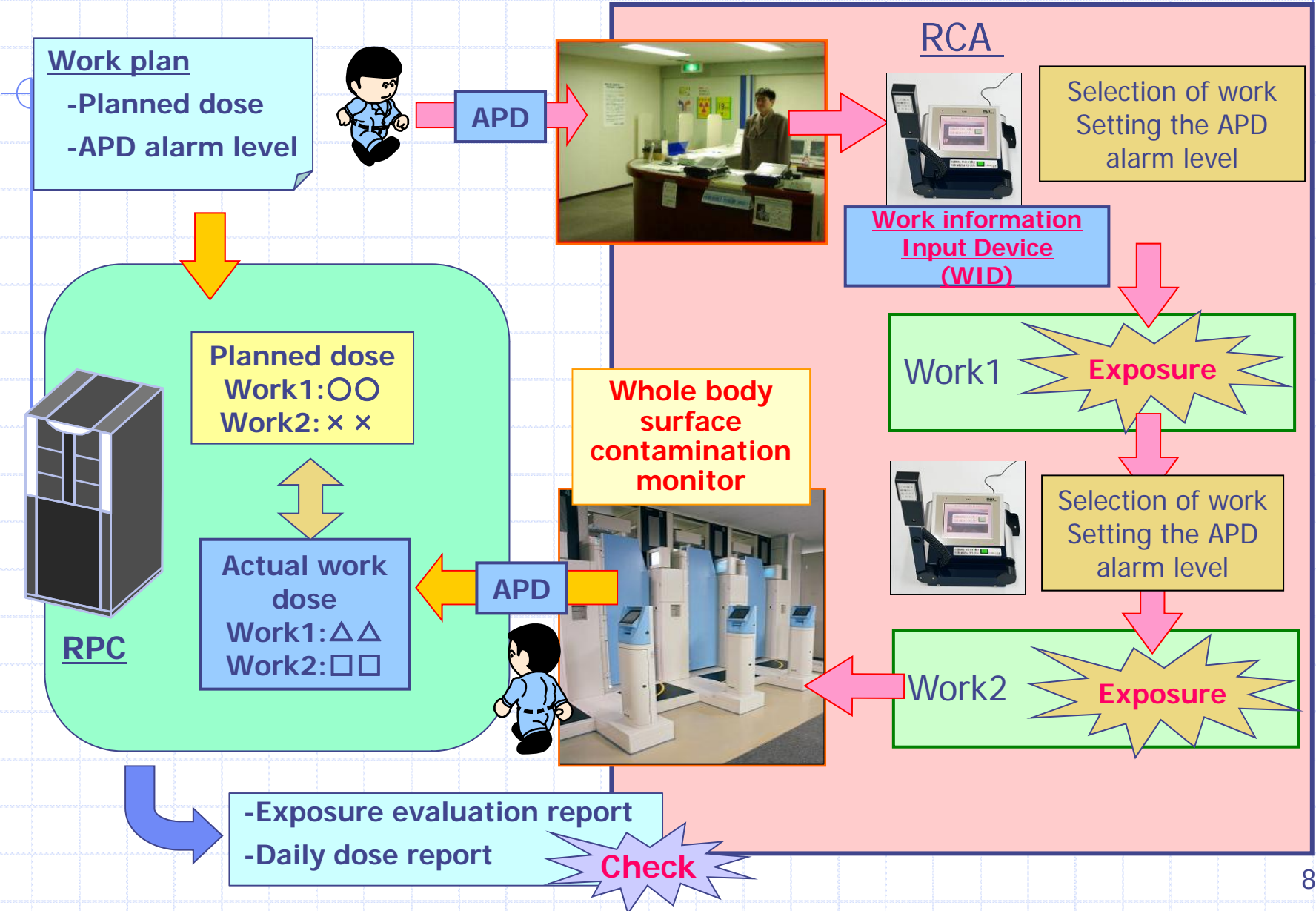
- Conduct work
- Implement exposure reduction measures

《 Check 》

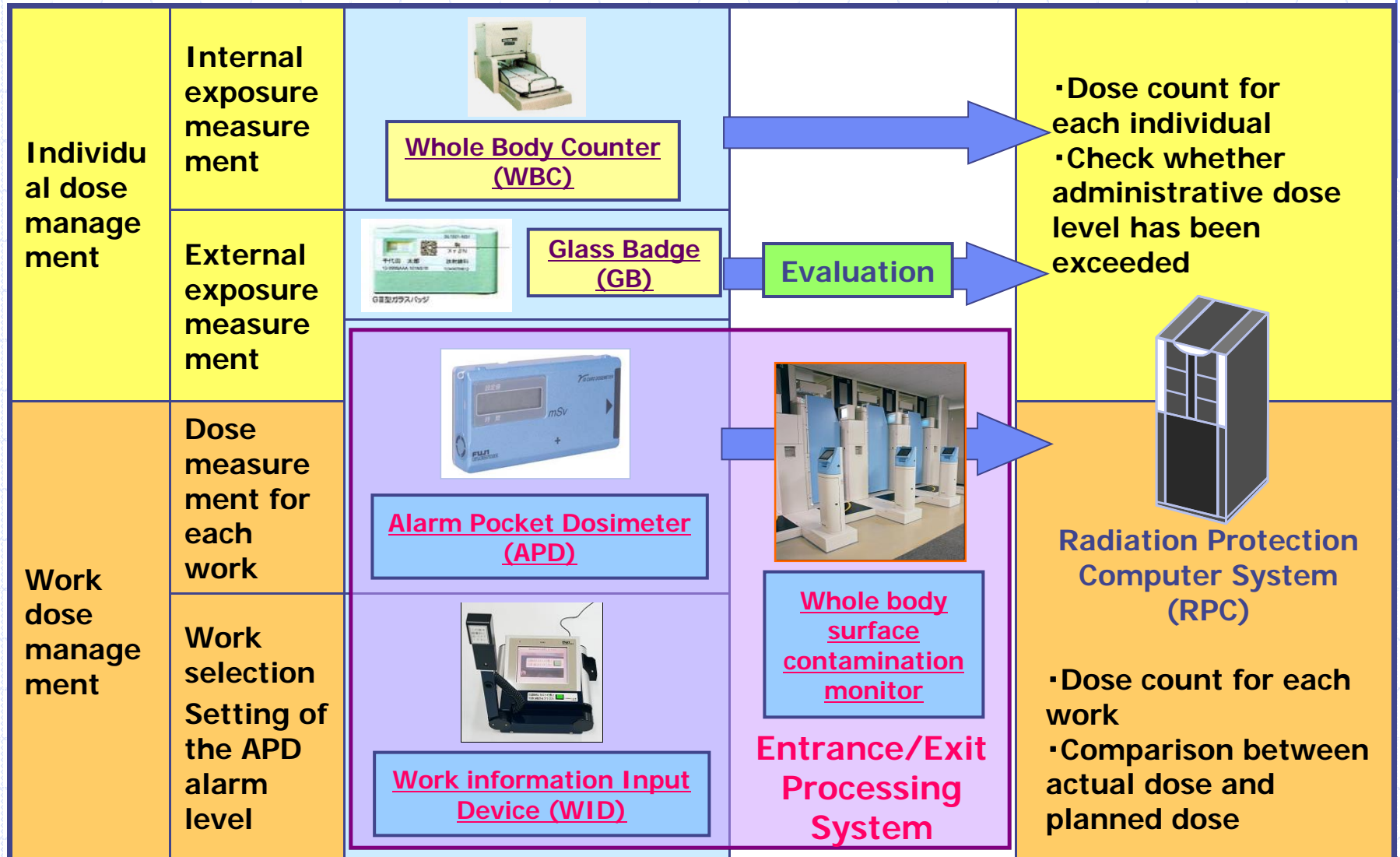
- Compare the actual dose and planned dose
- Check the effects of the exposure reduction measures

Continue improvements, aiming for even better exposure reduction

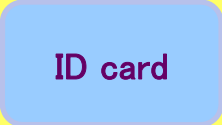



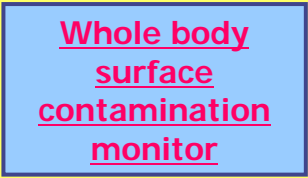






Work dose management



Devices used for individual dose management and work dose management



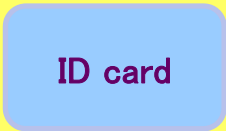



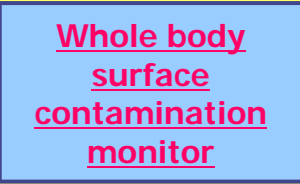






Overview of the entrance/exit processing system at the Shika Nuclear Power Station

Function	Devices used
RCA entry qualification determination	 +  
Body contamination inspection upon exiting the RCA	 
Daily individual dose measurement	 
Dose measurement for each work	  +  

Entry qualification determination and ID card

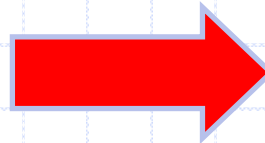
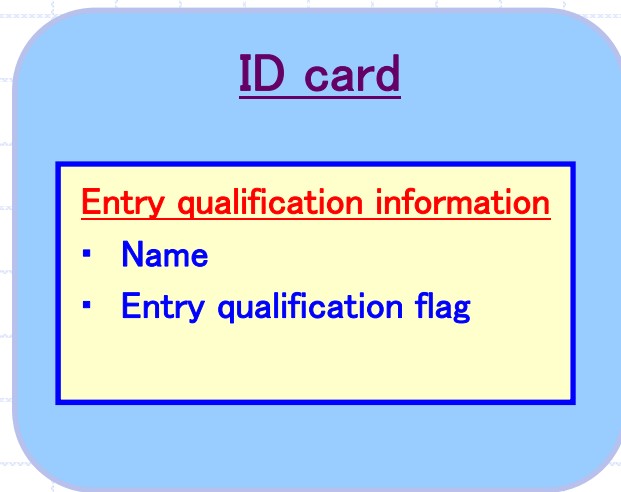
- ◆ Workers that need to enter the RCA are given an ID card that proves that they have permission to enter the RCA.
- ◆ An IC chip is embedded into the ID card, and information regarding the permission to enter into the RCA, etc, is registered onto the IC chip.
- ◆ When entering the RCA, the ID card must be shown to the surveillance agent at the entrance of the RCA.

Overview of the control access system at the Shika Nuclear Power Station

Function	Devices used	Characteristic
RCA entry qualification determination	 +  	①The APD makes the entry qualification determination
Body contamination inspection upon exiting the RCA	 	—
Daily individual dose measurement	 	—
Dose measurement for each work	  +  	②It does not take trouble to register work information to the WID that is used for work selection.

(Feature 1) The APD makes the entry qualification determination

- ◎ The APD determines whether permission to enter the RCA has been granted when the ID card is inserted into the APD.
(Entry qualification determination)



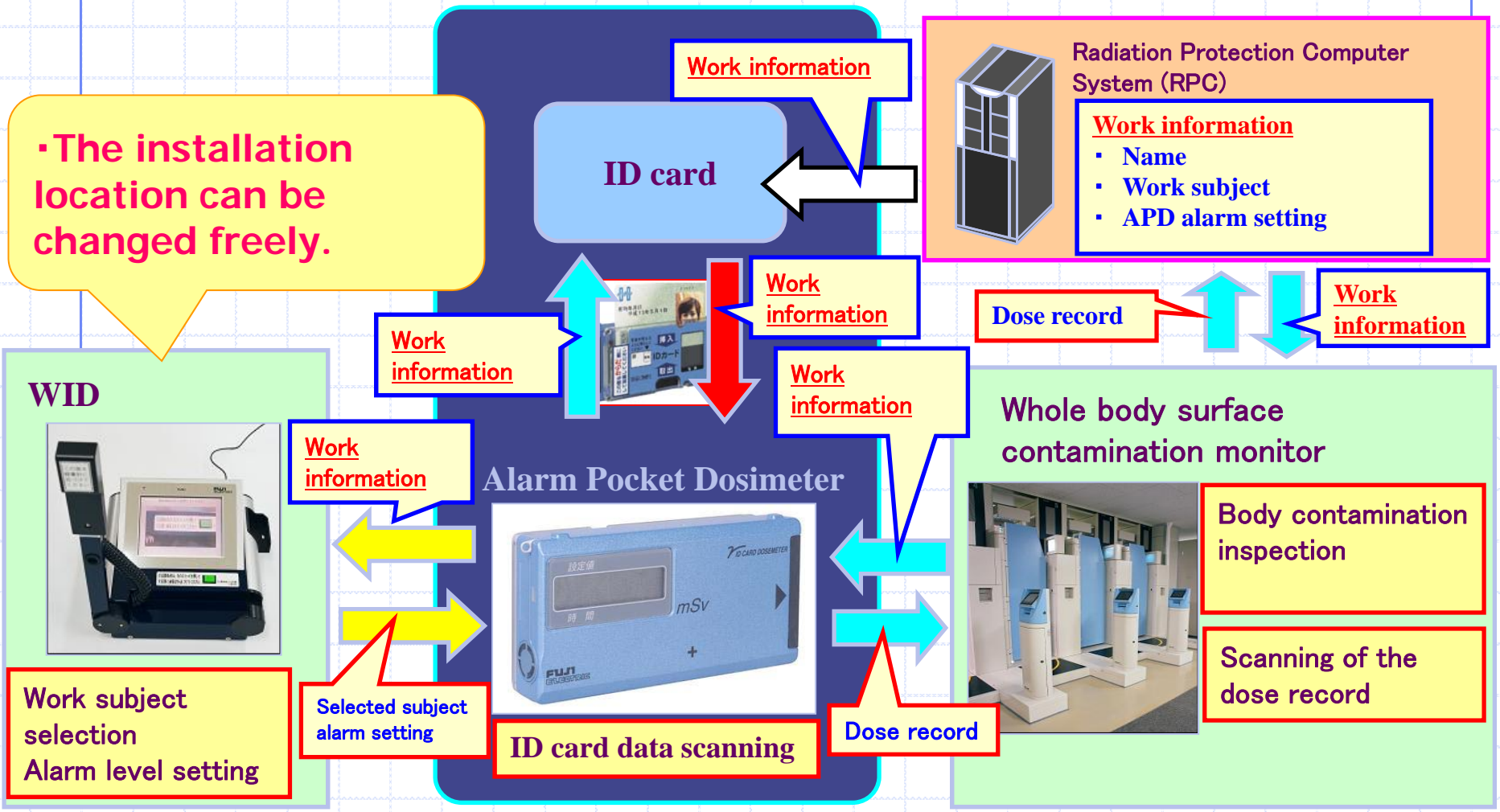
Load the ID card onto the dosimeter
The dosimeter scans the work information






Entry qualification determination

It is possible to enter the controlled area quickly.

(Feature 2) It does not take trouble to register work information to the WID



Functions of the entrance/exit processing system

Equipment name	Appearance	Main functions
APD		<ul style="list-style-type: none"> • Measures dose • Sounds an alarm when the dose reaches the APD alarm level • Classifies and records dose by work • Determines the controlled area entry qualification • Scans work information and APD alarm level from the ID card
Whole Body surface contamination monitor		<ul style="list-style-type: none"> • Measures body surface contamination • Scans the dose and work information from the APD
WID		<ul style="list-style-type: none"> • Sets the work information onto the APD • Sets the alarm level onto the APD • Scans the work information from the APD

Conclusion

- ◆ The Shika Nuclear Power Station conducts detailed dose management using the radiation protection computer system and the control access system.
- ◆ The control access system of the Shika Nuclear Power System is designed to reduce the burden on managers and workers when realizing detailed dose management.

Thank you
for your attention !!



Shika Nuclear Power Station