

Shin-Kori unit 3&4

Development of IDIS
(Integrated Drain Information System)
for reducing radiation exposure

Sept. 10, 2015

Shin-Kori nuclear plant #2, KHNP

Dong-ug Kim





Best Way

● Efficient

RADIATION AREA

● Economical

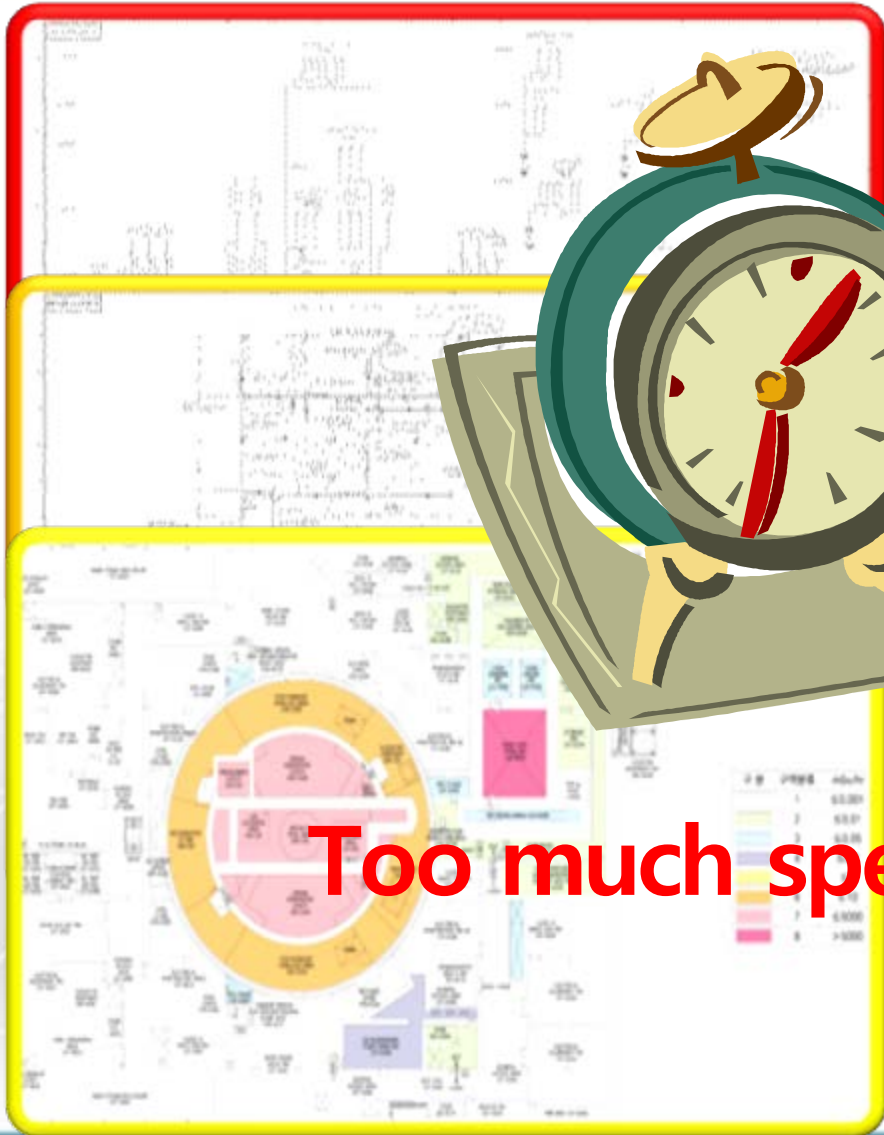
● Resonable



Accident - Leak



Accident - Leak



P&ID

Plumbing

Radiation Zone

Too much spend time



INTRODUCTION

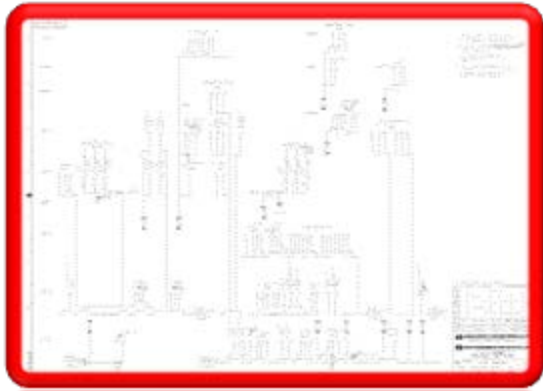


▷ PURPOSE

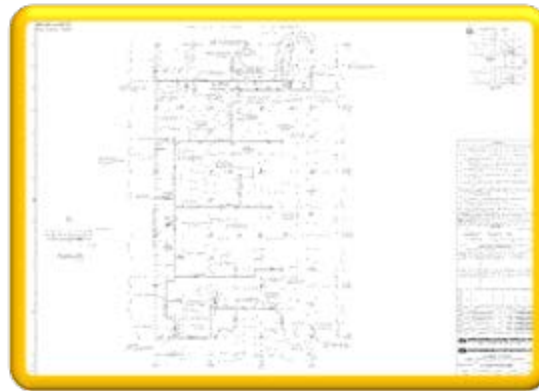
- - To reduce radiation exposure of workers by finding drain pipes faster and by setting the limits when abnormal event occur like leaking liquid waste.



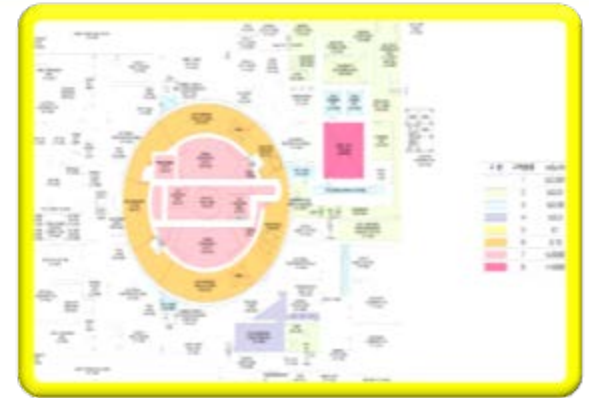
IDIS(1)



P&ID



Plumbing DWG



Rad Zone DWG



Data base



Integrated Drawing



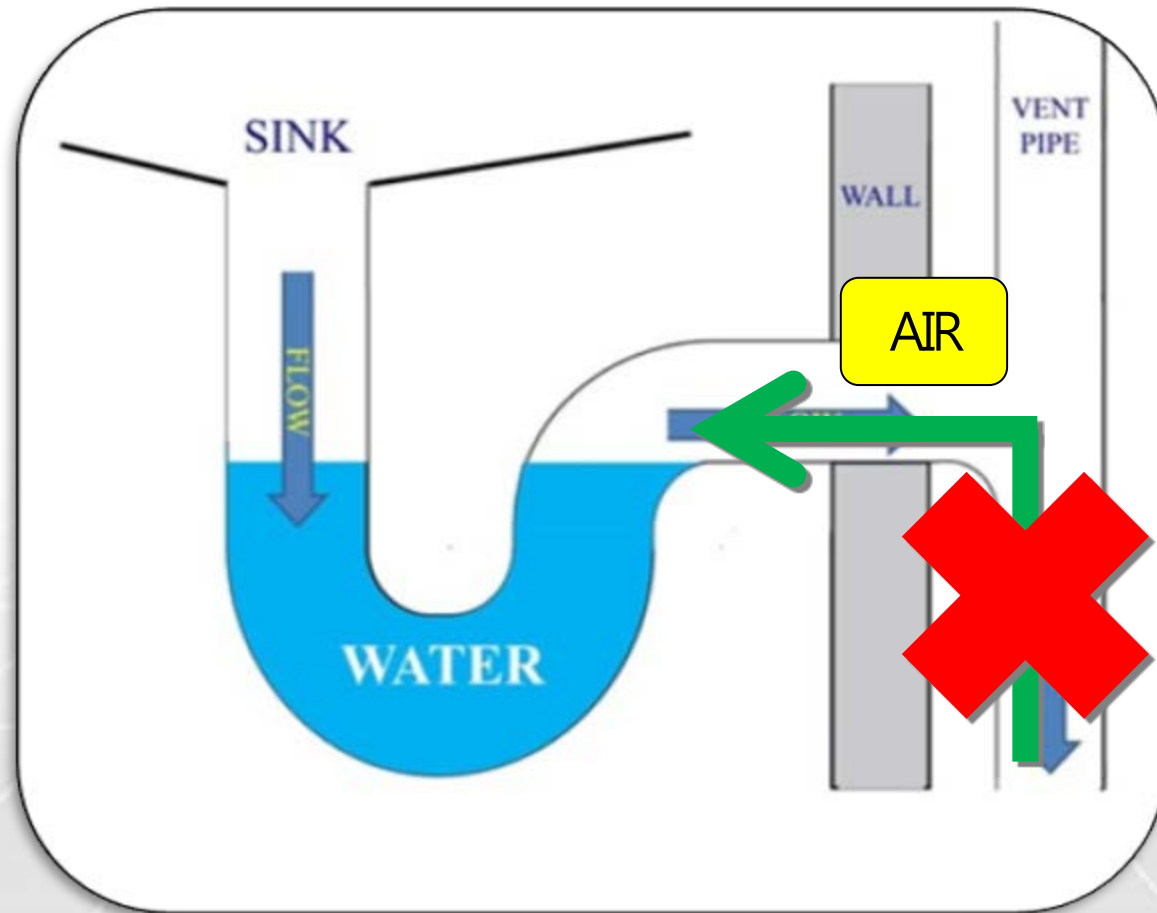


Floor Drain Hole



Equipmnet Drain Hole

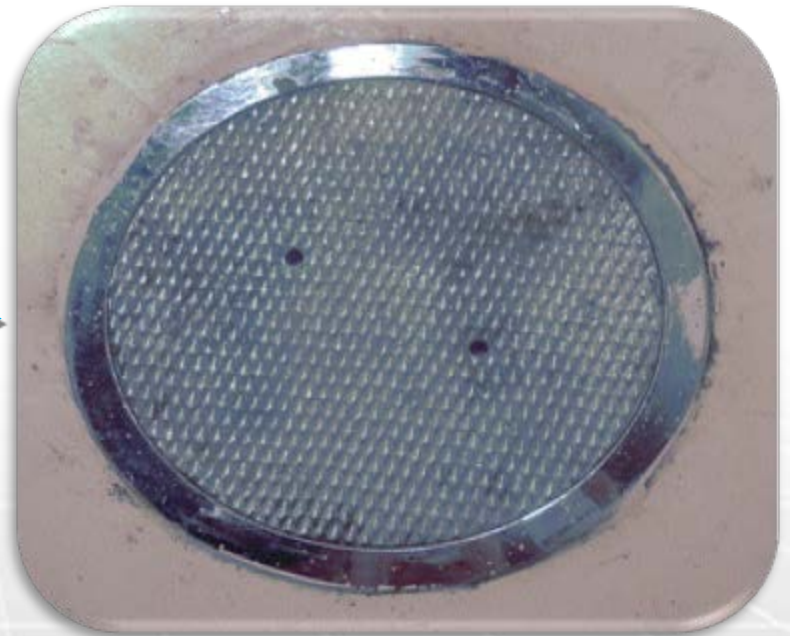
Problem : Pollution 1-2



Problem : Pollution 2-2



before



After



EXPECTED EFFECT



- ▷ **Leakage accident(KHNP) : 62/year**
- ▷ **Use to find the cause about sump's and water tank's level increase/decrease in abnormal accident**
- ▷ **Reduction of worker's radiation exposure**

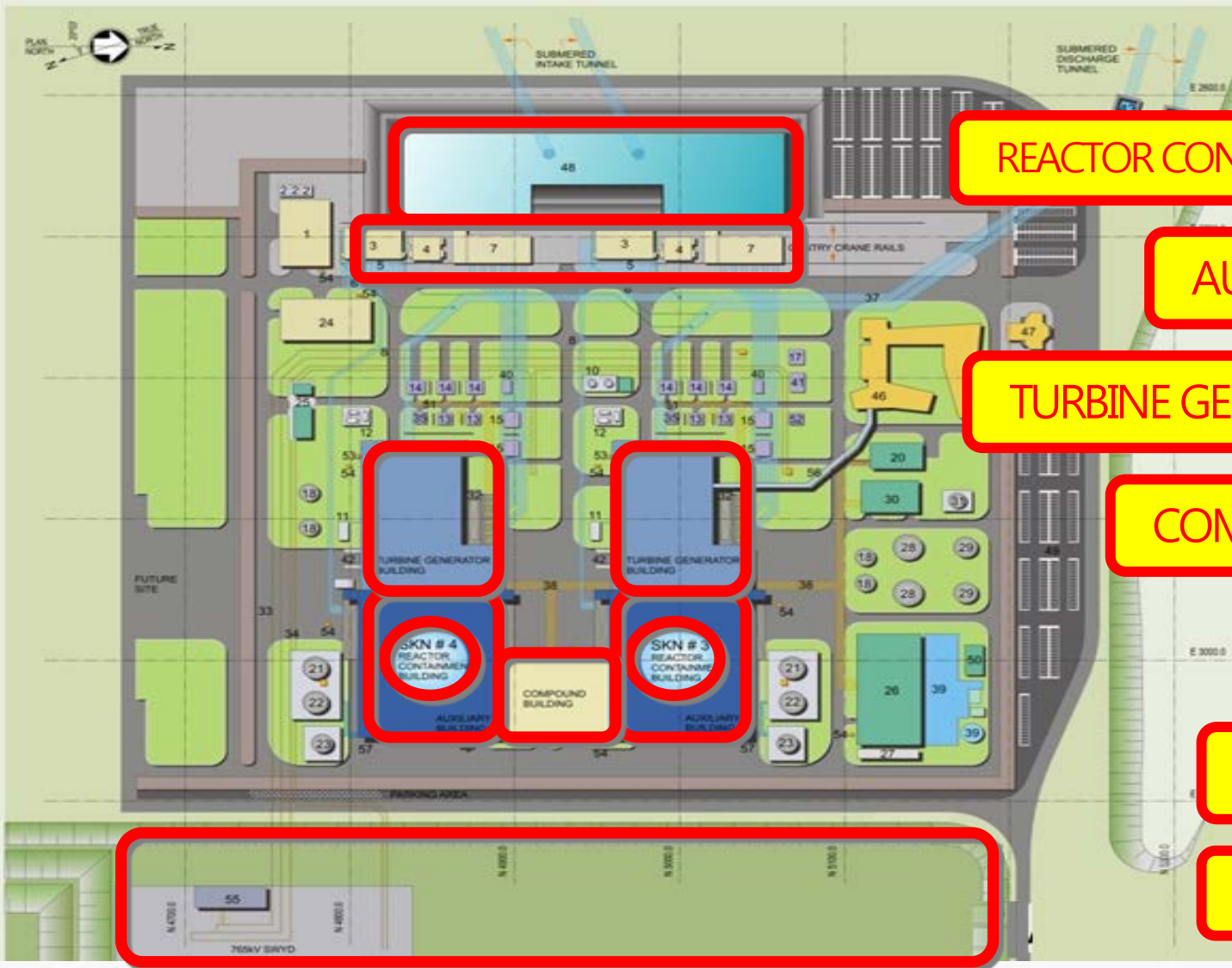




Thank you



APR 1400(SITE PLAN)



REACTOR CONTAINMENT BUILDING

AUXILIARY BUILDING

TURBINE GENERATOR BUILDING

COMPOUND BUILDING

SWITCH YARD

INTAKE STRUCTURE

INTAKE RESERVOIR



APR 1400(IMPROVEMENT)



IMPROVEMENT OF DESIGN

Contents	OPR 1000	APR 1400
Design lifetime	40 years	60 years
Capacity of generating plant	1000MW	1400MW
Refueling period	12~18 months	18 months
Instrument & control system	ANALOGUE	DIGITAL
Seismic design	0.2g	0.3g

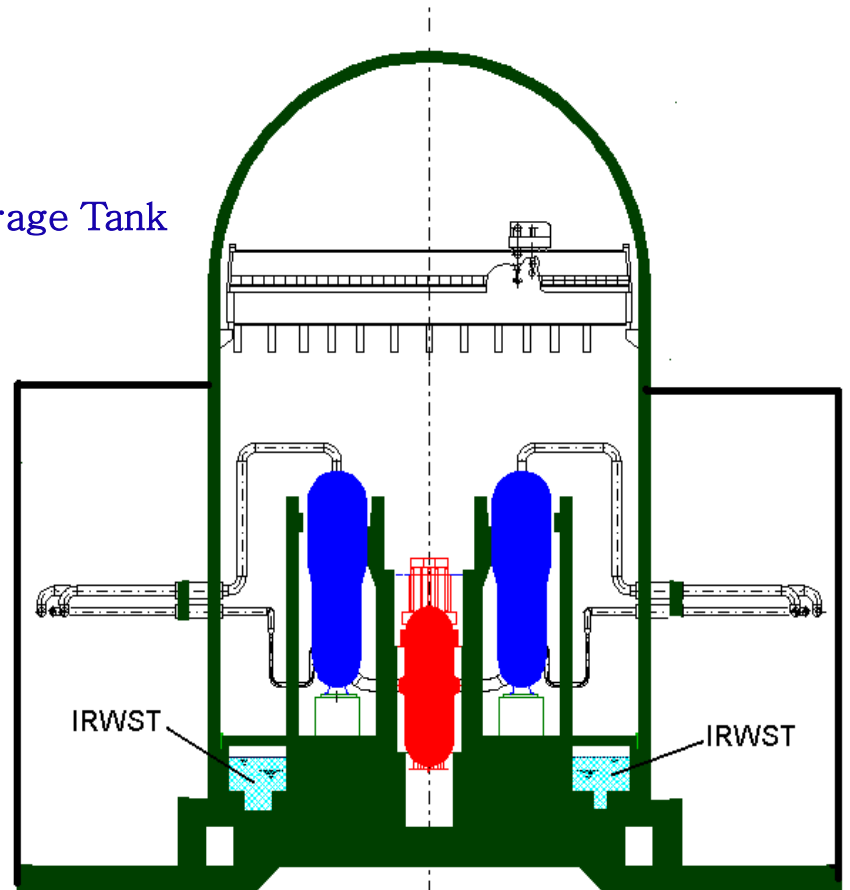


APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

IRWST

- IRWST : In-Containment Refueling Water Storage Tank
- Unnecessariness of changing the safety injection pump's suction
- Continuous supply of cooling water in accident

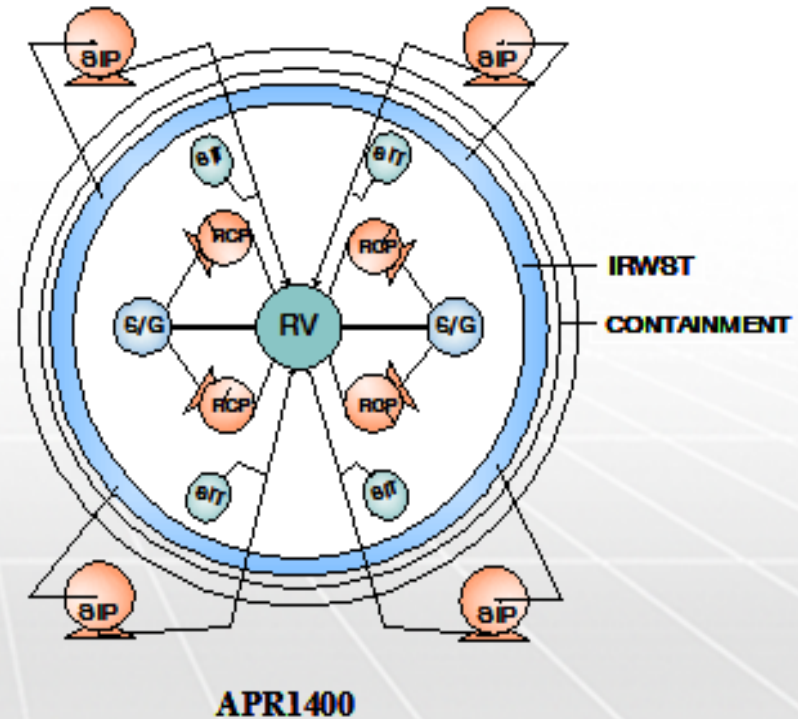


APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

DVI

- DVI : Direct Vessel Injection
- 2 division cold-leg injection
→ 4 division reactor injection
- Loss protection of safety injection suction in accident



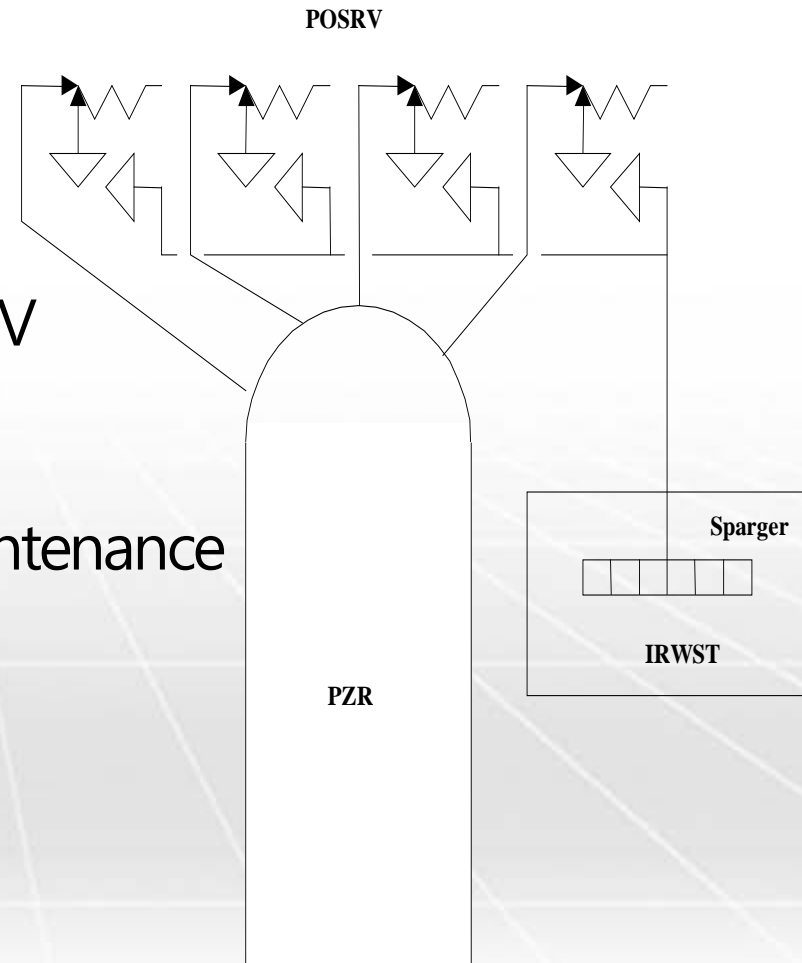
APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

POSRV

- POSRV : Pilot Operated Safety and Relief Valve

- Integration between SRV and PRV
 - * SPV : Safety Pressurized Valve
 - * PSV : Pzr Safety Valve
- Improvement of equipment maintenance and simplification

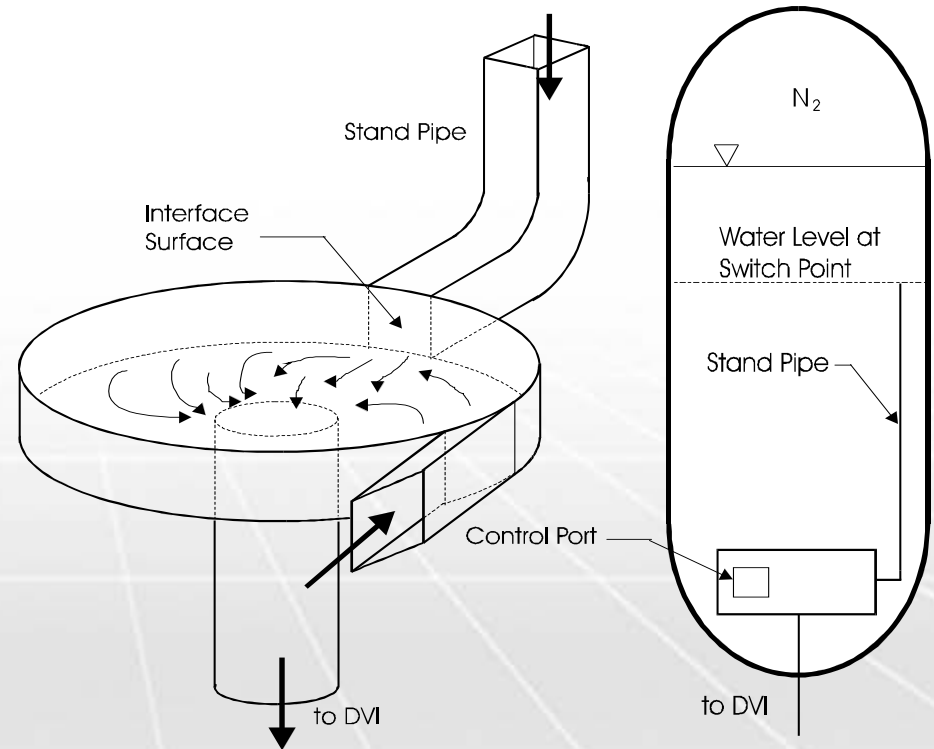


APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

SIT Fluidic Device

- Installment of SIT Bottom
* SIT : Safety Injection Tank
- Safety enhancement
by extending
the safety injection time

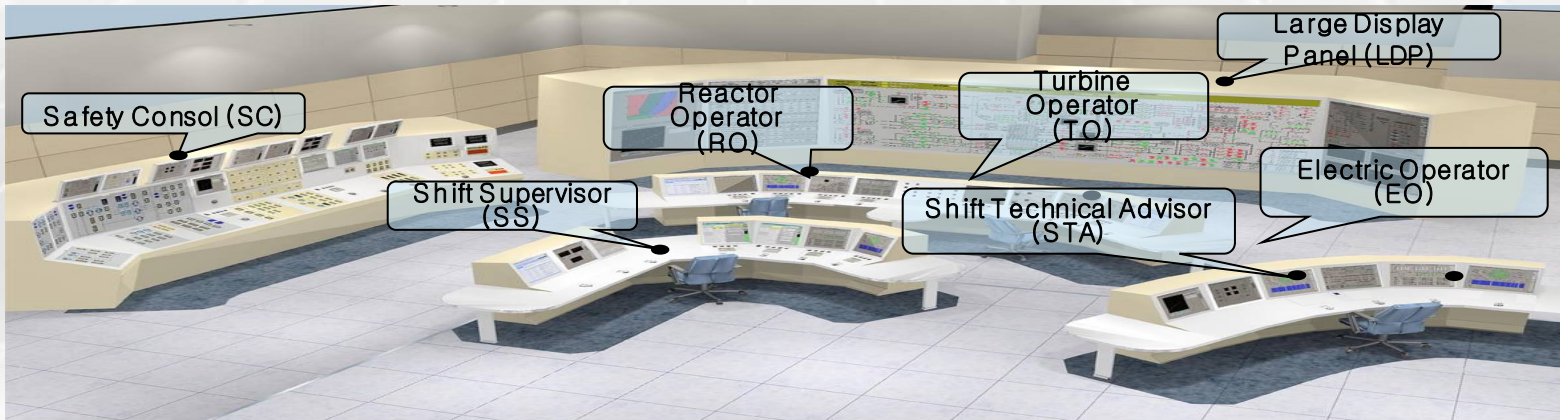


APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

MMIS

- MMIS : Man-Machine Interface System
- Application of MMI human engineering design basis
- Computerization of procedure
 - CPS : Computerize Procedure System

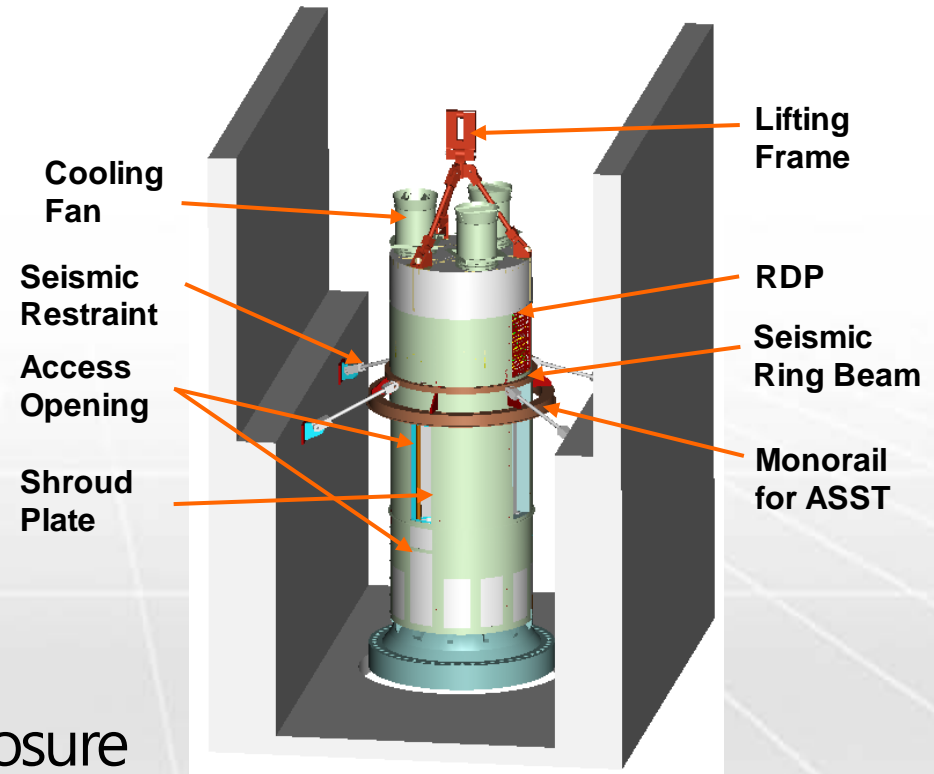


APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

IHA

- IHA : Integrated Head Assembly
- The simplification of upper structure design
- Improvement of equipment maintenance and constructability
- Reduction of radiation exposure



APR 1400(IMPROVEMENT)

IMPROVEMENT OF EQUIPMENT

Submerged intake system

- Environment friendly

