

Direction to Adopting Risk-Informed and Performance-Based Regulation

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가 (RIPBR : Risk-informed and Performance-based Regulation)

가 (PSA : Probabilistic Safety Assessment)

, RIPBR 가

RIPBR

RIPBR 가 RIPBR

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3 8 가 RIPBR

Abstract

The USNRC has pursued the incorporation of new regulatory approach of risk-informed and performance-based regulation (RIPBR) into nuclear safety regulation, as an alternative to improve

existing nuclear safety regulation of nuclear power plants, which is deterministic and prescriptive. It focuses on the use of risk insight from probabilistic safety assessment (PSA). Recently, it becomes necessary to find a way to improve regulatory efficiency and effectiveness in order to cover the increasing regulatory needs in Korea. Also, the utility has optimized design and operation of the plant using PSA insight and equipment performance information. According to the increase of the necessity for regulatory improvement using risk and performance information, KINS (Korea Institute of Nuclear Safety) is developing, as a part of mid- and long-term project of Nuclear R&D program, how to adopt the RIPBR in Korean nuclear regulation. This paper presents the interim result of the study that comprises the assessment of feasibility to adopt the RIPBR, and basic directions and principles for implementing RIPBR model. It is concluded that adopting RIPBR is essential for risk management of the plant, public acceptance to nuclear safety, improvement of existing regulation, minimization of unnecessary regulatory burden, and effective use of regulatory resources, etc. Three basic directions and eight principles that are necessary to implement RIPBR model are identified from the study. The application of the directions and principles to the assessment of RIPBR model to be established in the near future is expected to result in making the adoption of new regulatory system more objective and consistent.

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Analysis) , , 가 (Deterministic , (Prescriptive Requirements) . , 가 / 가 . , 가 (PSA : Probabilistic Safety Assessment) , (RIPBR : Risk-informed and Performance-based Regulation) [1-3].

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1994

가가 [4],
가
2002 가

[5-6].

PSA
RIPBR

RIPBR

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RIPBR

2. /

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(Risk-informed Regulation)

(Risk-

(Prescriptive)

(Performance-based)

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[7].

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(-2)

ALARA	- /	- Dose Limit ()
	- ,	- Diesel Reliability of 95%

(-3)

	Code () (-)	Code ()
	() - PRA -	() ,
	+	+ (Operability)

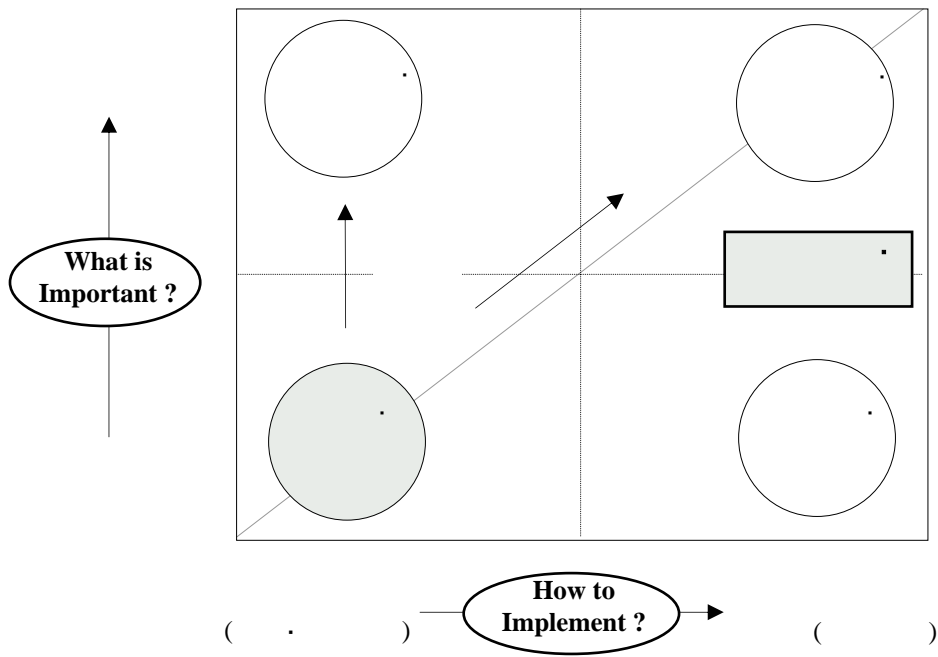
RIPBR

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- 가 (가)
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RIPBR 가 1 . ,
가 (/) . RIPBR

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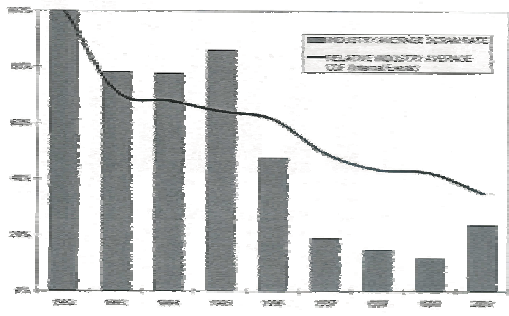
3. RIPBR

3.1

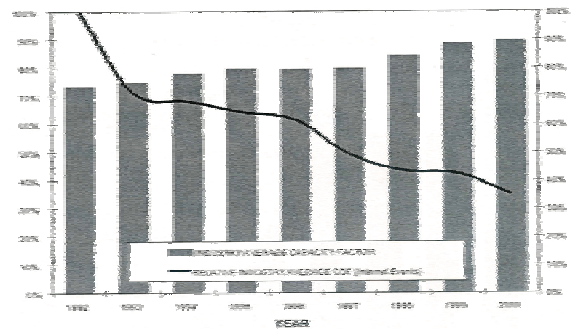
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RIPBR

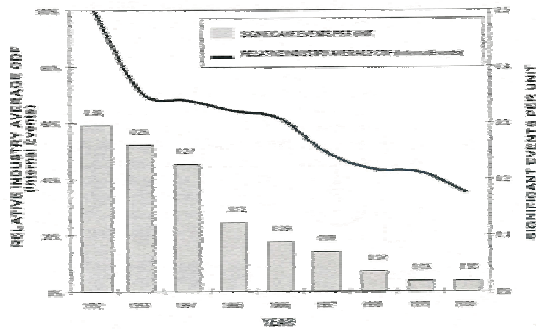
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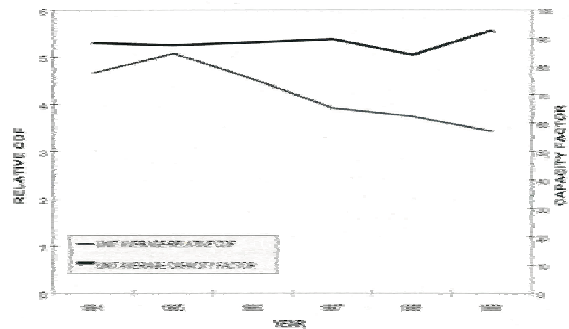
(a) CDF



(b) CDF



(c) CDF



(d) CDF ()

2 가

2 WOG/ASME 가

		ISI	RI-ISI	(%)		(10)
Milestone3		753	107	86	< \$325,000	75 man-rem
	Class 1	446	59	87		
	Class 2/3,	307	48	84		
Surry 1		385	136	65	< \$245,000	60 man-rem
	Class 1	220	55	75		
	Class 2/3,	165	81	50		

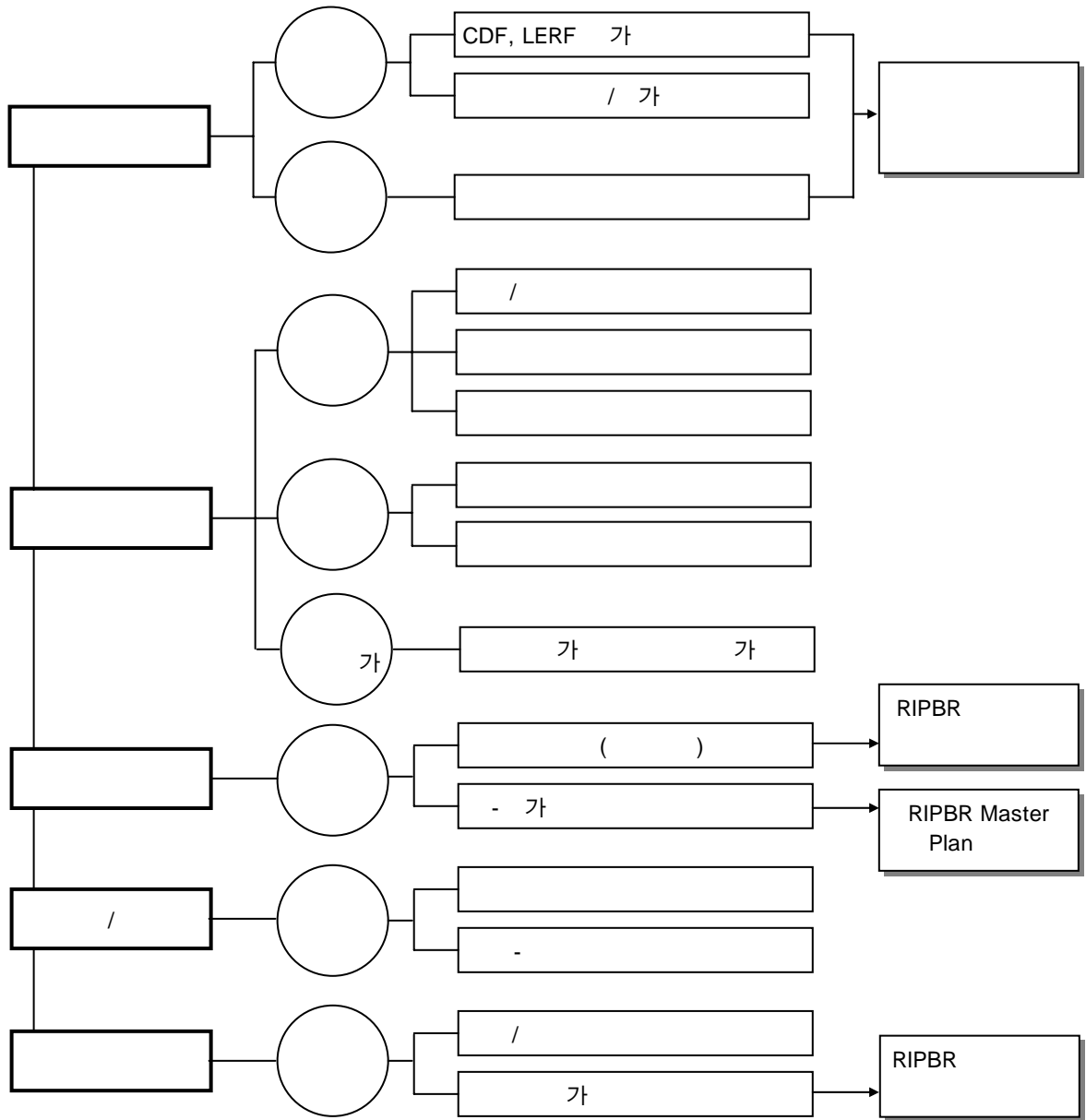
3.2.5

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() (PSA)
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가 ,
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RIPBR 가
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4. RIPBR

4.1

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3 RIPBR 가

RIPBR

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8가

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2) 가 ,

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5) PSA ,

6) / 가 .

7) , ,

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RIPBR 4 .

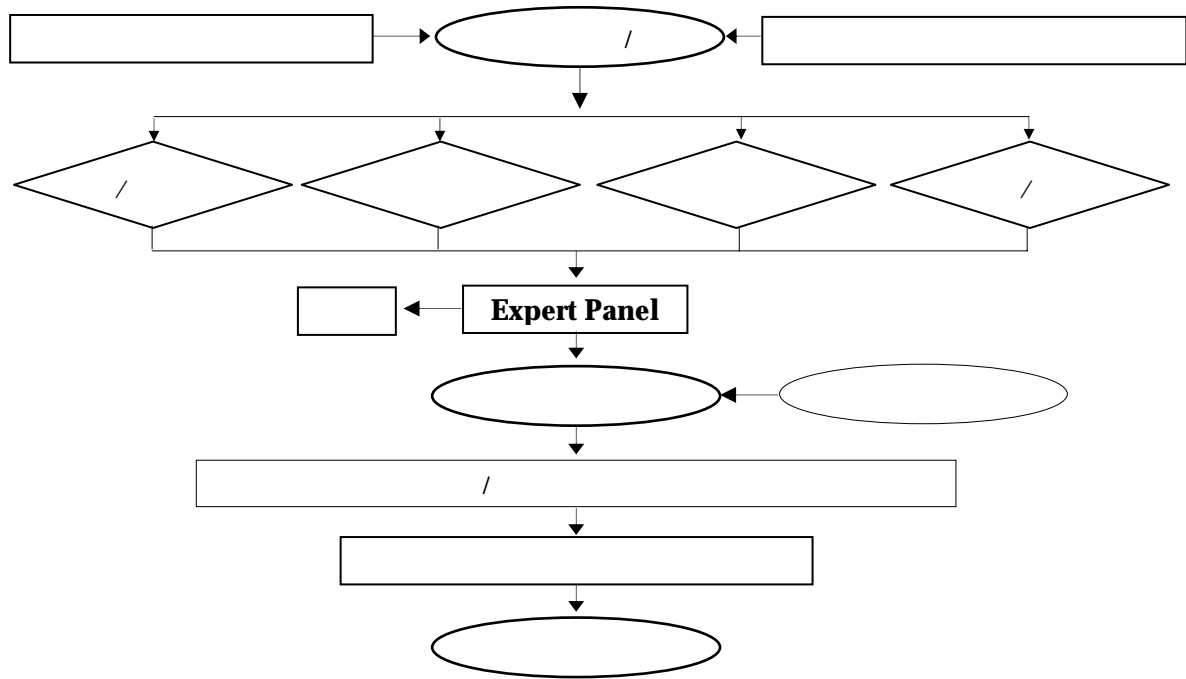
4.2

RIPBR

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4 RIPBR

5.

(RIPBR) 가 ,
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RIPBR

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