APR1400 LPSD PRA Approaches

1. Introduction
2. Discussion on Draft LPSD PRA Standard
3. Discussion on Draft Level 2 PRA Standard
4. Discussion on Proposed ALWR PRA Standard
5. Risk Insights and Disposition
6. Conclusion

1. Fire PRA for LPSD (1/3)

TS

1. Fire PRA for LPSD (2/3)

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1. Fire PRA for LPSD (3/3)

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1. Level 2 PRA for LPSD (1/3)

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1. Level 2 PRA for LPSD (2/3)

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1. Level 2 PRA for LPSD (3/3)

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2. Draft LPSD PRA Standard (1/7)

❖ Status

- The ANS LPSD subcommittee has drafted a standard for the technical adequacy of a shutdown PRA model.
- The draft is in revision to address subcommittee concerns and NRC feedback.
- Formal submittal for NRC review may occur later in 2014.

ANS/ASME-58.22

Low Power and Shutdown PRA Methodology

TRIAL USE AND PILOT APPLICATION

Publication of this Standard for trial use has been approved by ASME and ANS. Distribution of this Standard for trial use and comment shall not continue beyond 36 months from the date of publication, unless this period is extended by action of the JCNRM. It is expected that following this 36-month period, this draft Standard, revised as necessary, will be submitted to the American National Standards Institute for approval as an American National Standard. A public review in accordance with established ANSI procedures is required at the end of the trial use period and before a Standard for trial use may be submitted to ANSI for approval as an American National Standard. This trial use Standard is not an American National Standard.

2. Draft LPSD PRA Standard (2/7)

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2. Draft LPSD PRA Standard (3/7)

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2. Draft LPSD PRA Standard (4/7)

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2. Draft LPSD PRA Standard (5/7)

TS

2. Draft LPSD PRA Standard (6/7)

❖ Regulatory Experience to Date

- The NRC will expect a reasonable effort to address expected quality requirements
- The NRC has provided positive feedback on similar, recent use of the draft standard to the extent possible for other applicants

2. Draft LPSD PRA Standard (7/7)

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[redacted]

3. Draft Level 2 PRA Standard (1 of 3)

❖ Status

- The ANS LPSD subcommittee has drafted a standard for the technical adequacy of an at-power Level 2 PRA model.
- Formal submittal for NRC review may occur later in 2014.
- The standard was written for at-power, but was examined for potential applicability to the APR1400 LPSD Level 2

3. Draft Level 2 PRA Standard (2 of 3)

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3. Draft Level 2 PRA Standard (3 of 3)

TS

4. Proposed ALWR PRA Standard

- ❖ Discussion on the proposed ALWR PRA Standard

5. Risk Insights and Dispositions

❖ RG 1.206, C.I.19.6 – Development of Risk Insights

- Areas where certain design features are the most effective in reducing risk with respect to operating reactor designs;
- Major contributors to risk, such as hardware failures and human errors;
- Major contributors to maintaining the "built-in" plant safety and ensuring that the risk does not increase unacceptably;
- Major contributors to the uncertainty associated with the risk estimates; and
- Sensitivity of risk estimates to uncertainties associated with failure data, assumptions made in the PRA models, lack of modeling details in certain areas, and previously raised issues

5. Risk Insights and Dispositions

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5. Risk Insights and Dispositions

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5. Risk Insights and Dispositions

Table 19.1-4 Risk Insights and Assumptions

Item #	Insight/Assumption	Disposition
17	The reliability of the MSSVs, ADVs, and MSIVs is important. The COL applicant will ensure the reliability of these components.	RAP, Maintenance Rule
18	The COL applicant should consider the information on risk import ant operator actions from the PRA, as presented in Table 19.1.24 & 25, in developing and implementing procedures, training and other human reliability related programs.	COL Item 19.1(XX), Section 19.1.4.1

Samples Only

6. Conclusion

- ❖ APR1400 DC LPSD PRA basic methodology and approaches has been discussed
- ❖ Discussions on the draft standards and its applicability to APR1400 DCD
- ❖ Approach to the APR1400 DCD risk insights and key assumptions, including the dispositions

- ❖ Any feedbacks?

THANK YOU!