



RIC 2010
SPAR Model Peer
Reviews

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SPAR Model Peer Reviews: Industry Perspective

- Appreciated NRC request for industry participation
 - Identify gaps with respect to ASME PRA Standard requirements
 - Focus on ASME RA-Sc-2007 Capability Category I
 - 5 volunteers for the 2 reviews, through Owners Groups and NEI
 - Rob Cavedo (Constellation); Ching Guey (FPL); Allen Moldenhauer (Dominion); Ed Burns, Barry Sloane (ERIN)
 - Viewed as opportunity to better understand SPAR models, bases, capabilities, limitations
- Followed NEI-05-04 PRA Peer Review Process
 - Same as Industry peer reviews but exclude Internal Flooding, LERF
 - Two Independent review teams, 4 days at INL for each review



SPAR Model Peer Reviews: Some Key Observations

- Consistent Results (% of SRs Met/Not Met) between reviews
- Consistent Conclusions regarding issues in both reviews, although one team prepared more Observation reports (F&Os)

PWR Review Capability Category	Model Assessment	
	# of SRs	%
Not Met	90	42
I	20	9
I/II	7	3
II	3	~1
II/III	3	~1
III	1	<1
Met (All)	91	42
TOTAL:	215 *	100%

BWR Review Capability Category	Model Assessment	
	# of SRs	%
Not Met	77	37
I	19	9
I/II	9	4
II	5	2
II/III	3	~1
III	2	~1
Met (All)	101	47
TOTAL:	216 *	100%

* PWR Review judged 11 SRs Not Applicable; BWR Review judged 10 SRs Not Applicable



SPAR Model Peer Reviews: Key Observations: Strengths

- SPAR model fault trees are streamlined, but with an appropriate level of detail for the model's intended users.
- SPAR model structure and SAPHIRE computer software are at the state of the technology.
- There are a large number of generic initiating events that are addressed within the SPAR model.
- Generic data and common cause applications are well performed and technically sound.
- Within limits of the models, SPAR is an efficient method for qualitative and quantitative insights for applications, SDP evaluations, inspections, event assessments, etc.



SPAR Model Peer Reviews: Key Observations: Limitations

- SPAR Documentation lacks sufficient detail to support End User understanding of the model bases and limitations
- Lack of Plant-Specific Event and Reliability Data
- Lack of Plant-Specific Procedure Response in HRA
- Some limitation in modeling detail
 - e.g., system actuation logic
- Insufficiently frequent Benchmarking with Plant-Specific PRA to capture plant mods, results insights
 - Requires additional resources from both Licensees and NRC/INL