

MSPI Implementation

Margin Awareness

Margin Management

- MSPI introduces challenges to utilities with respect to communicating indicator margins to the threshold.
- Effectively responding to MSPI may require changes in plant practices (and possibly plant design)

Margin Communication

MSP Window	Monticello		Palisades		Prairie Island 1		Prairie Island 2		Point Beach 1		Point Beach 2	
Emergency AC Power	Green	4	White	0	150 hr	1	150 hr	1	121 hr	1	121 hr	1
		4		1		2		2		2		2
High Pressure Injection	Green	4	20 hr	0	Green	4	Green	4	Green	2	Green	3
		5		1		4		4		2		3
Heat Removal	Green	4	Green	2	Green	1	Green	1	150 hr	1	145 hr	1
		4		2		4		4		2		2
Residual Heat Removal	Green	5	145 hr	1	Green	2	Green	2	Green	3	Green	3
		6		1		2		2		3		3
Support Cooling	Green	7	15 hr	0	Green	2	Green	2	20 hr	0	20 hr	0
		7		4		2		2		3		3

Margin Communication

		EAC Power (DG/AP)		HRB (AF)		NPI (CVSI)		RWR (RWS)		CWS (CC/X)			
DG: MSP Margin to White	Component numbers	1DG01KA/B 2DG01KA/B	2DG01KA/B 1DG01KA/B										
	Failures in current 36 months												
	Failure to start	2	2										
	Failure to load run	2	2										
	Failure to run												
Pump: MSP Margin to White	Component numbers			1AF01PA	2AF01PA	1CV01PAB	2CV01PAB	1R01PAB	2R01PAB	1CC01PAB 0CC01P	2CC01PAB 0CC01P	1CC01PAB 0CC01P	2CC01PAB 0CC01P
	Failures in current 36 months			0	0	0	0	0	0	0	0	0	0
	Failure to start					5	5	2	2	0	0	0	0
	Failure to run			2	5	5	5	2	2	0	0	0	0
	Component numbers			1AF01PB	2AF01PB	1SI01PAB	2SI01PAB			1SX01PAB 2SX01PAB	2SX01PAB 1SX01PAB		
Failures in current 36 months			0	0	0	0			0	0			
Failure to start			2	4	4	4			2	2			
Failure to run			2	4	4	4							
Values: MSP Margin to White	Component numbers			1SX173AB	2SX173AB	11 MOVs	11 MOVs	10 MOVs	10 MOVs	0Y12SX007	1ZSX005	0Y12SX007	1ZSX005
	Failures in current 36 months			0	0	0	0	0	0	0	0	0	0
	Failure on Demand			4	4	4	4	3	3	2	4	2	4
Time Unavailability: Margin to White	Component numbers												
	planned hours	1758	1830			88	881	745	388	405			
											CC: 3174	CC: 3178	
											8X: 233	8X: 233	

Margin Management

- Prior to taking any action that affects margins in MSPI, a plant needs to identify why a system allows little unplanned unavailability or tolerates few failures before reaching the White threshold.
- This can be done by comparison to similar plants, analysis of PRA results or other methods.

Types of changes for Margin Management

Actions for improving MSPI margins fall into 3 broad groups:

1. Operational practice changes
2. PRA modeling
3. Plant design and procedure changes

Types of Potential Changes to Improve Plant Safety

- **Maintenance Practices**
 - Change maintenance to improve reliability (planned UA has a neutral impact and should reduce failures)
 - Extend post-maintenance run times
- **Operating Practices**
 - Increase demand frequency for risk-significant components (impact of a single failure is reduced and reliability is increased)
 - Change surveillance testing program frequency where appropriate

Types of Potential Changes to Improve Plant Safety

PRA Changes

- Credit additional operator actions (reduces importance of component failures, provides additional routes to success)
- Move beyond design basis success criteria (e.g. # of PORVs required to open) (more realistic success criteria reduce the number of events that are reportable as failures)
- Expand modeling in PRA by crediting additional systems or increasing detail of existing model

Types of Potential Changes to Improve Plant Safety

- **Plant Design Changes**
 - Proceduralize use of existing physical capability such as piping that can serve as a cross-tie
 - Install non-safety related equipment, e.g. portable generators to keep batteries charged during SBO
 - Install additional diesel, AFW train or crosstie between trains, systems or units

Conclusion

- Changes made to improve MSPI margin, if chosen properly, will improve equipment performance and increase operational flexibility.
- MSPI will drive improvement in plant safety.