The Need for Drywell Venting

- Current SAMGs instruct operators to flood containment after vessel breach
- Isolation of wetwell vent timing depends on plant-specific design
- Opening of Drywell vent depends on pressurization after the wetwell is isolated and could be as much as 2 - 3 days later

Summary of Drywell Venting Time EPRI Study (1026539)

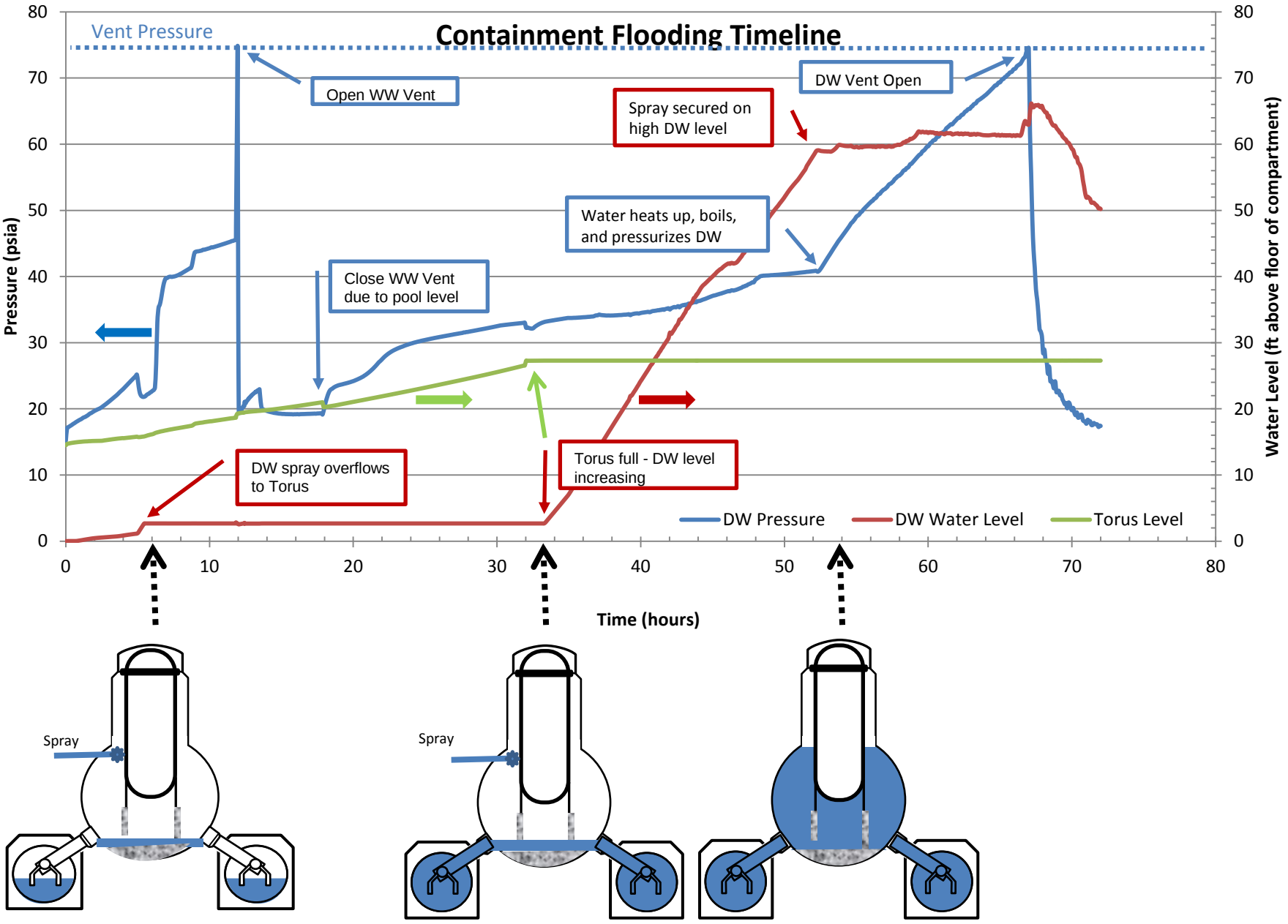
Case	Initial WW Vent Opening	Isolation of WW vent on High Pool Level (1)	DW Vent Opened(2)
Venting cases			
Flood & RHV	12.1 hr	17.7 hr	66 hr
Spray & RHV	11.9 hr	17.9 hr	67 hr
Filtering strategies cases			
Flood & RHV(3) (controlled)	12.1 - 16.8 hr	16.8	17.9 - 72.0 hr
Spray & RHV(3) (controlled)	11.9 - 17.9 hr	17.9 hr	19.7 - 72.0 hr

(1) Isolation of wetwell vent when pool level exceeds El. of vacuum breaker
(2) Water addition can suppress pressurization until injection is terminated and water heats to saturation
(3) Cases part of filtering strategies (rulemaking); not intended for containment depressurization alone (order)

Summary of Drywell Venting Time Tabletop (BWROG-TP-13-001)

Case[(1)]	Initial WW Vent Opening	Isolation of WW vent on High Pool Level [(2)]	DW Vent Opened
Scenario 3	6.7 hr	44.9 hr	47.6 hr
Scenario 4	35 min	45.5 hr	48.1 hr
Scenario 5	9.3 hr	46.2 hr	48.9 hr
Scenario 6	9.3 hr	51.7 hr	60.7 hr

(1) Results provided for all Base Case analyses assumed vent controlled within specified pressure band (also part of filtering strategies).
(2) Isolation of wetwell vent when pool level exceeds top of torus, which is the location of the vacuum breakers


Containment Flooding Timeline
Vent Pressure
Open WW Vent
Close WW Vent due to pool level
Water heats up, boils, and pressurizes DW
Spray secured on high DW level
DW Vent Open
DW spray overflows to Torus
Torus full - DW level increasing
DW Pressure
DW Water Level
Torus Level
Pressure (psia)
Water Level (ft above floor of compartment)
Time (hours)
0
10
20
30
40
50
60
70
80
Spray
Spray

Summary

- For cases with initial wetwell venting – the demand for opening the drywell vent could be 2-3 days from accident initiation (Ref: EPRI & Tabletop)
- Filtering strategies that maintain a higher pressure in containment may result in much early opening of the drywell vent and can be investigated as part of the Rulemaking in conjunction with water management strategies