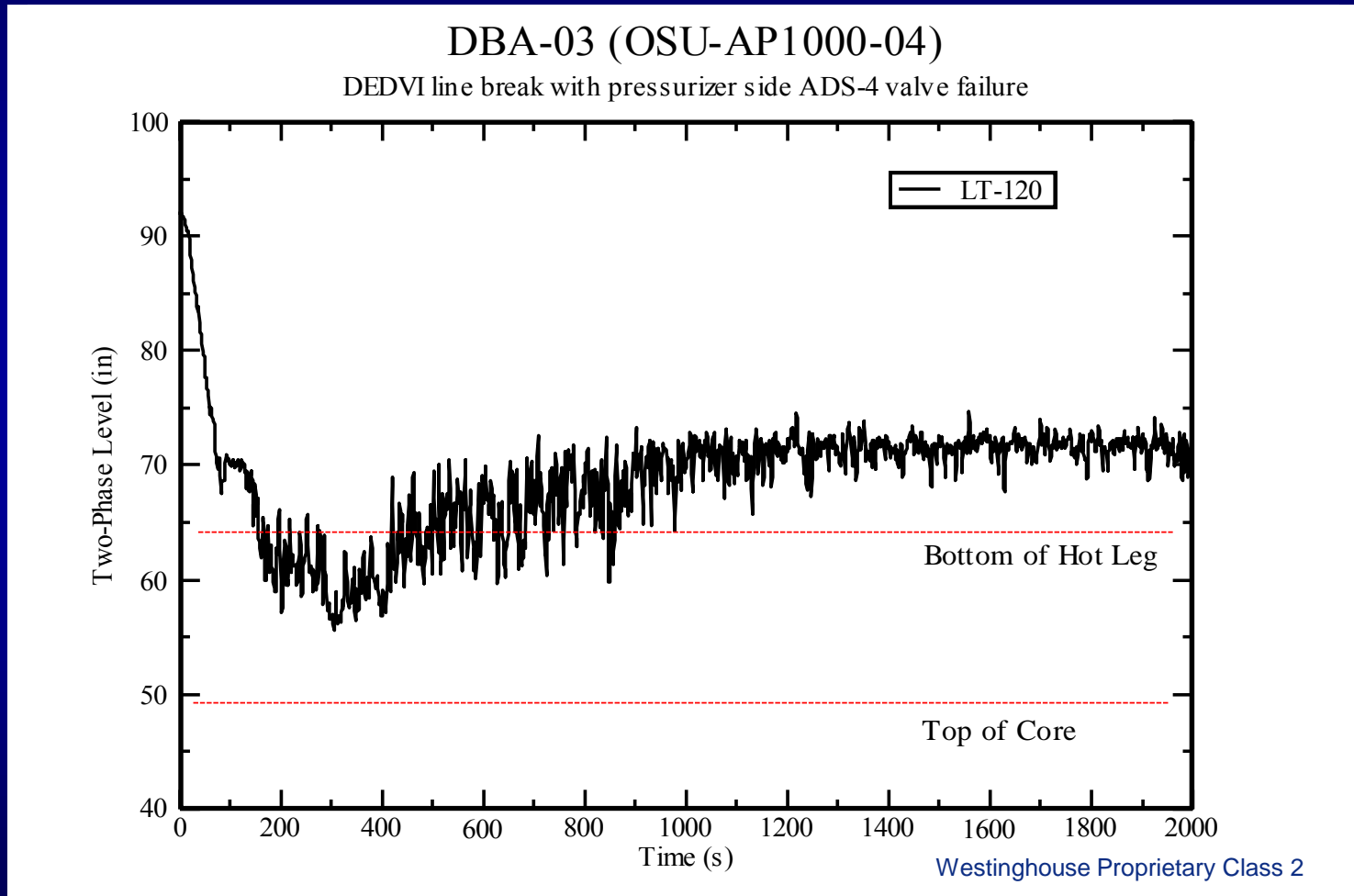




Design Basis Test Results

(Test DBA-03)



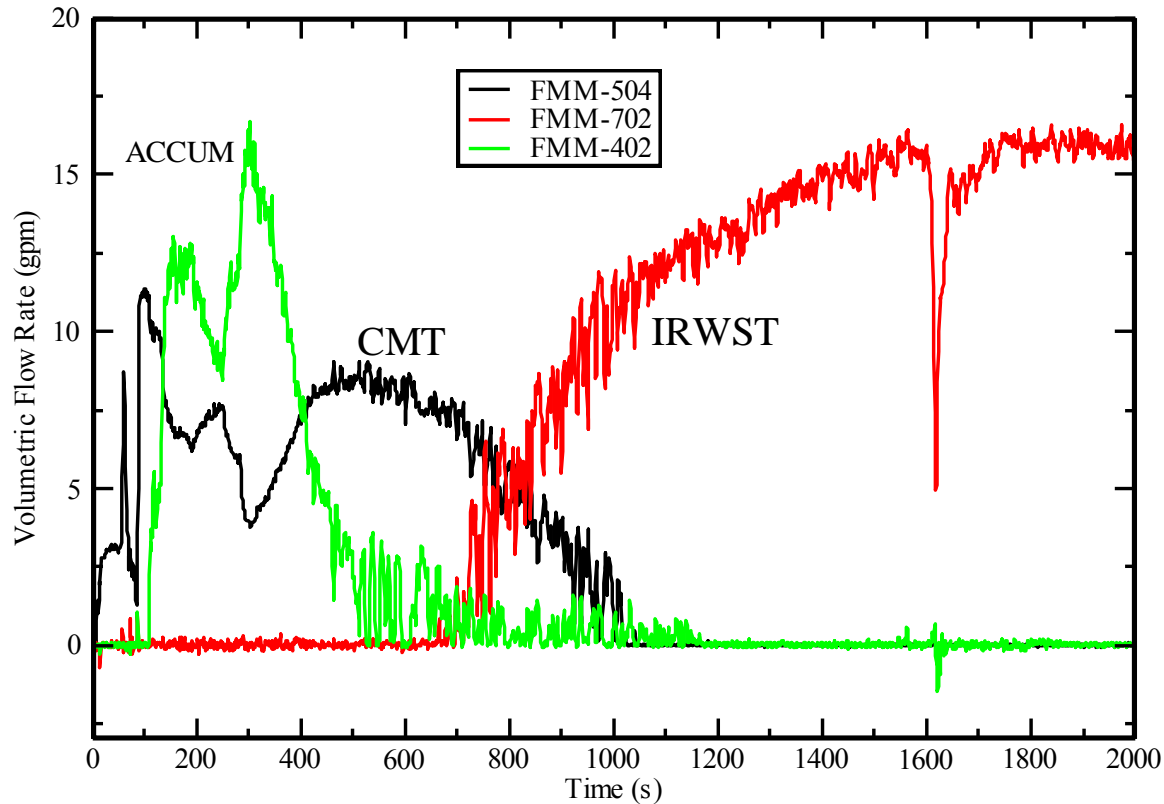


Design Basis Test Results

(Test DBA-03)

DBA-03 (OSU-AP1000-04)

DEDVI line break with pressurizer side ADS-4 valve failure



Westinghouse Proprietary Class 2



Design Basis & Beyond Design Basis

● Design Basis Event Testing

- Examines plant response for a hypothetical accident with single most limiting failure.
- Consistent with “Chapter 15” analyses, and helps confirm margin to regulatory limits.

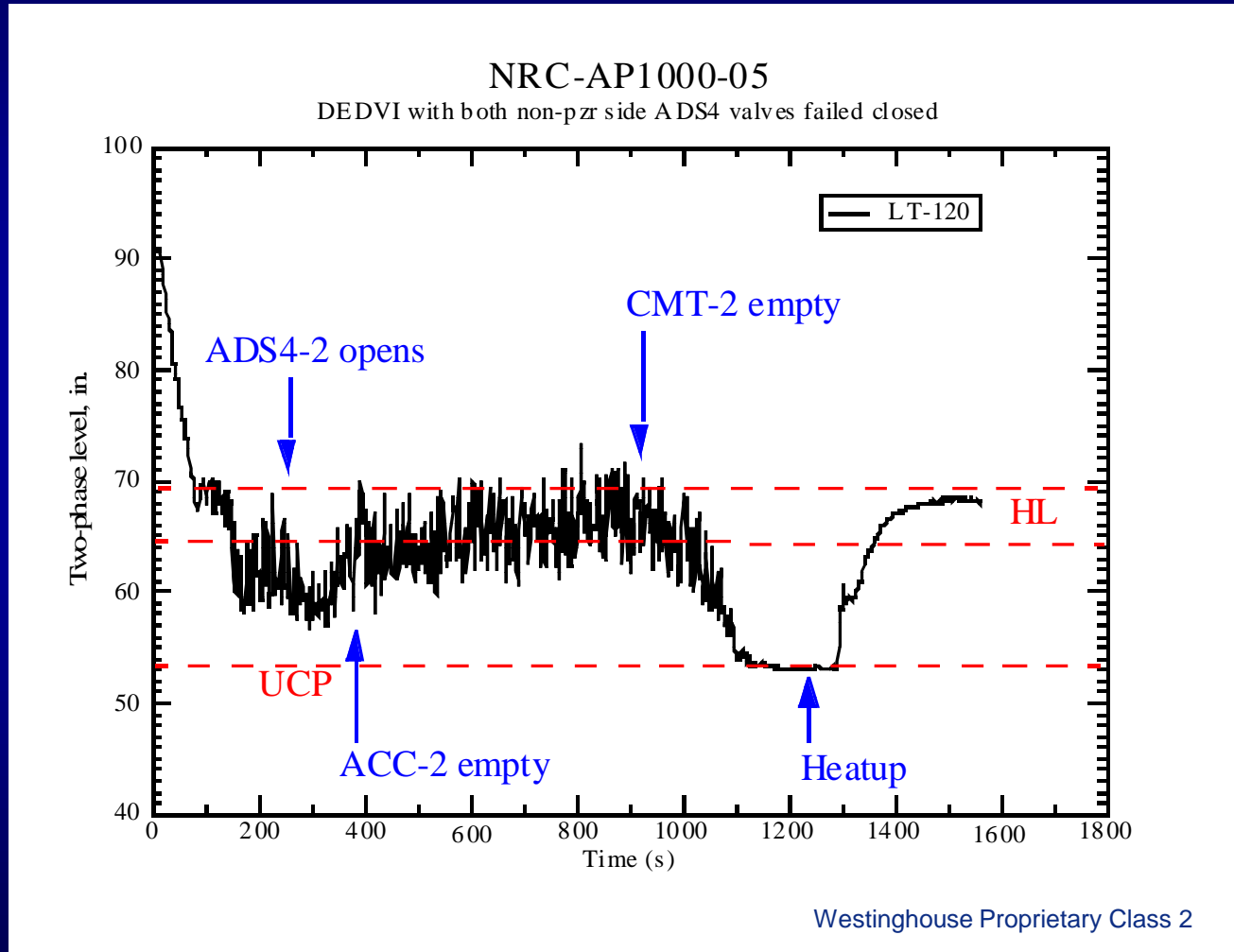
● Beyond Design Basis Event Testing

- Examines plant response for a hypothetical accident with multiple failures.
- Help confirm PRA assumptions.
- Can identify how much additional margin is available.
- Provides data for code assessment / development for conditions that probably do not occur in most DBA scenarios.



Beyond Design Basis Test Results

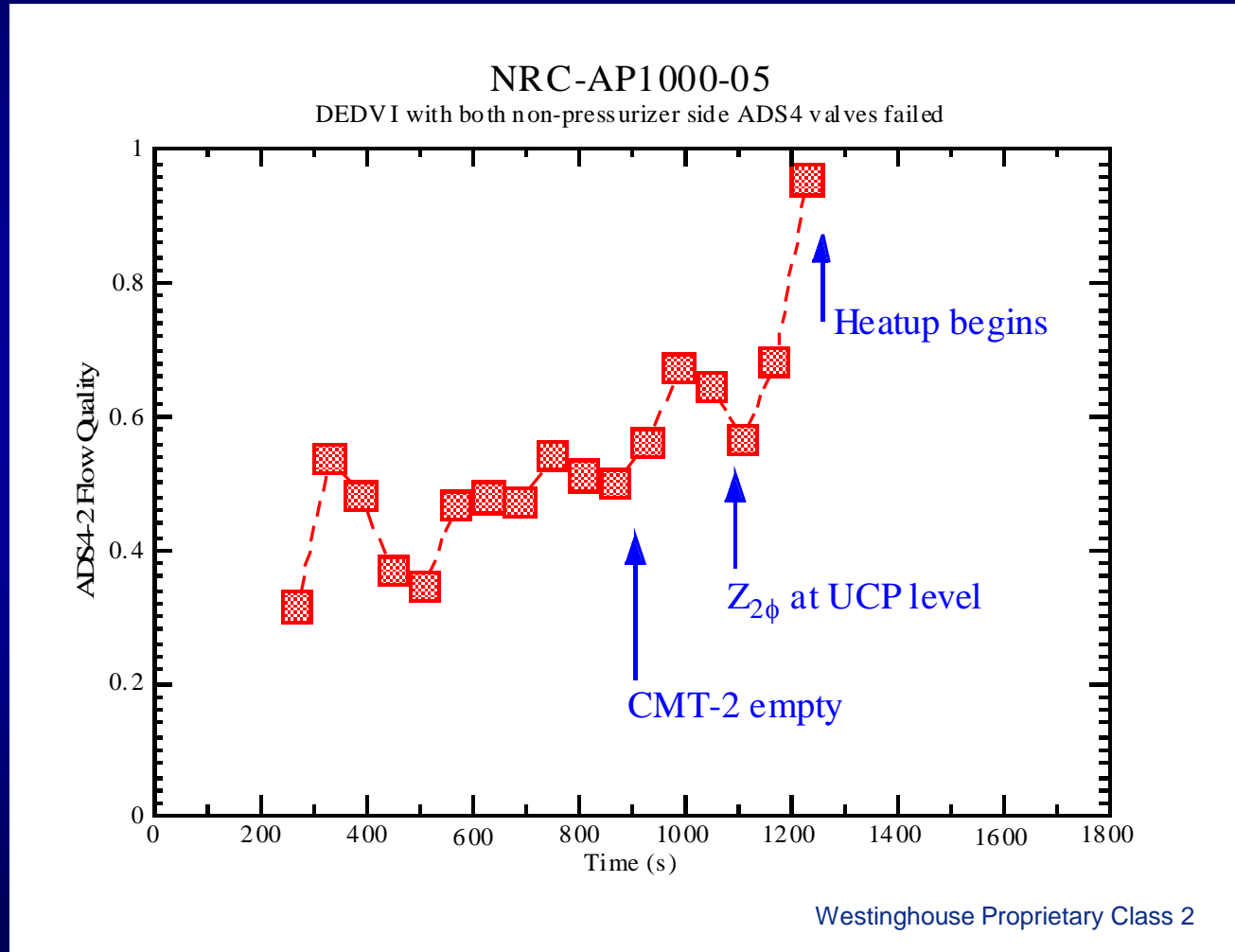
(Test NRC-AP1000-05)





Beyond Design Basis Test Results

(Test NRC-AP1000-05)





APEX-AP1000 Experimental Observations

● Design-basis tests showed:

- No core uncover or cladding heatup observed; two-phase levels near or above bottom of hot leg.
- Higher entrainment than AP600 tests. (DBA-02 vs NRC-20)
- Less margin to core uncover than in AP600. (DBA-02 vs NRC-20)
- Sensitivity to ADS4 valve location failure. (DBA-02 vs DBA-03)

● Beyond design basis tests:

- Showed failure of 2/4 ADS4 valves causes core uncover. (NRC-05 for DEDVI and NRC-06 for 2-in CL break)
- Sensitivity to ADS4 valve location failure. (NRC-03 vs NRC-05)
- Entrainment to ADS4 continues even when UP two-phase level drops to UCP. (NRC-05 and NRC-06)
- Confirmed “robustness” in AP1000 design. Multiple ADS failures in specific locations needed to produce core uncover.



Use of Experimental Findings in Review

- Data from APEX-AP1000 were used to identify code deficiencies and necessary corrections to Evaluation Model.

Model.

- APEX-AP1000 data confirmed large safety margin in AP1000 design.

No uncover / cladding heatup for design basis events.

