

## PMLevyCOLPEm Resource

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**From:** Habib, Donald  
**Sent:** Monday, March 23, 2015 8:54 AM  
**To:** PMLevyCOLPEm Resource  
**Subject:** Condensate Return NRC Status 3-26-2015.pptx (a e)  
**Attachments:** CR NRC Status 3-26-2015.pptx

**Hearing Identifier:** Levy\_County\_COL\_Public  
**Email Number:** 1268

**Mail Envelope Properties** (E3D0DF334F617344BE38EB00C881B1B3021BABC9D5B)

**Subject:** Condensate Return NRC Status 3-26-2015.pptx (a e)  
**Sent Date:** 3/23/2015 8:53:49 AM  
**Received Date:** 3/23/2015 8:53:51 AM  
**From:** Habib, Donald

**Created By:** Donald.Habib@nrc.gov

**Recipients:**  
"PMLevyCOLPEm Resource" <PMLevyCOLPEm.Resource@nrc.gov>  
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

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MESSAGE	3	3/23/2015 8:53:51 AM
CR NRC Status 3-26-2015.pptx		325318

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

# AP1000<sup>®</sup> IRWST Condensate Return Status

March 26<sup>th</sup>, 2015

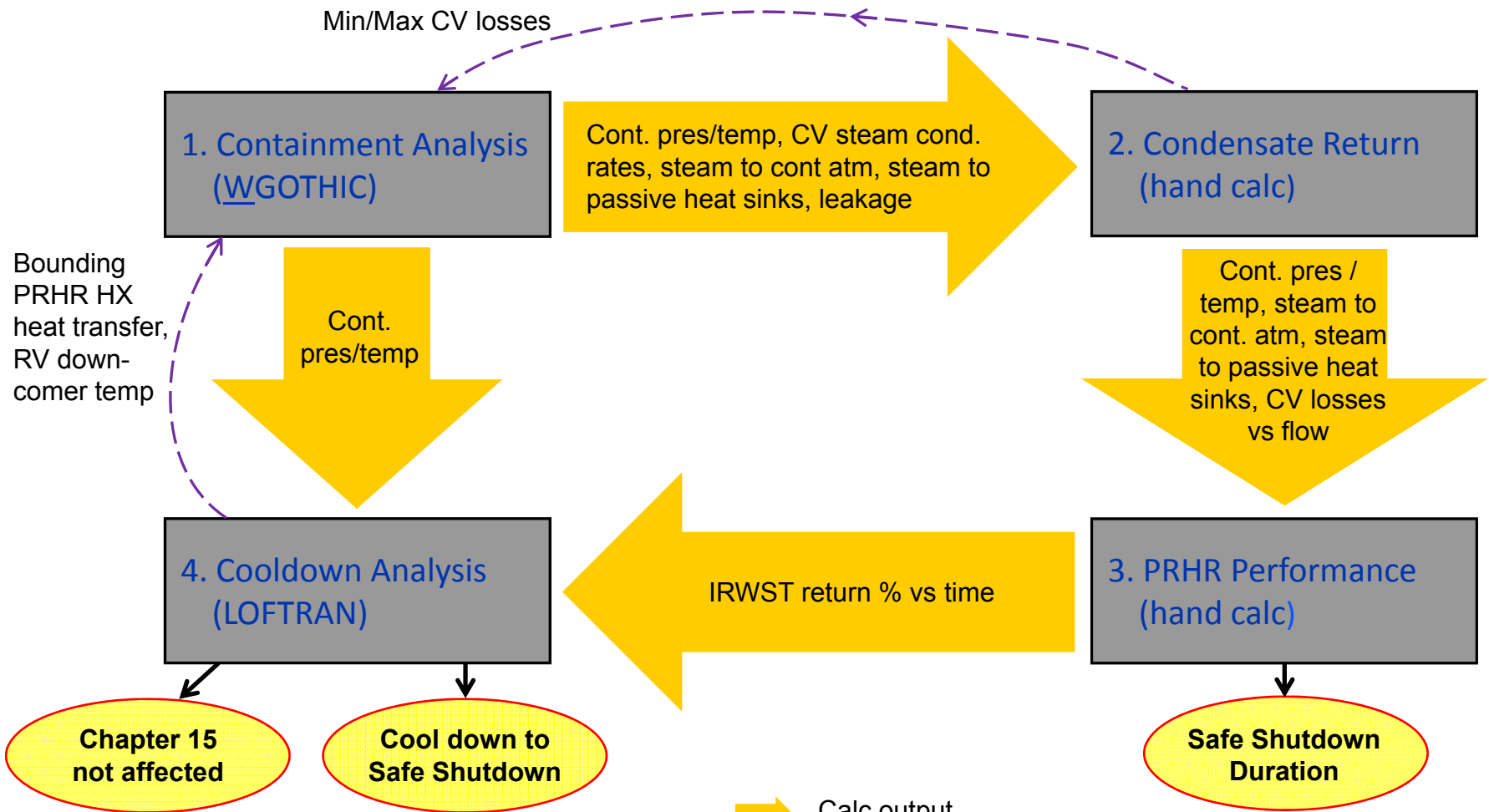


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# Agenda

- Streamlined Analysis Approach
- Status of Condensate Return (CR) Calculations
- Root Cause Analysis Summary
- Long Term Analysis Plan
- CR Submittal Timeline

# Prior Analysis Approach

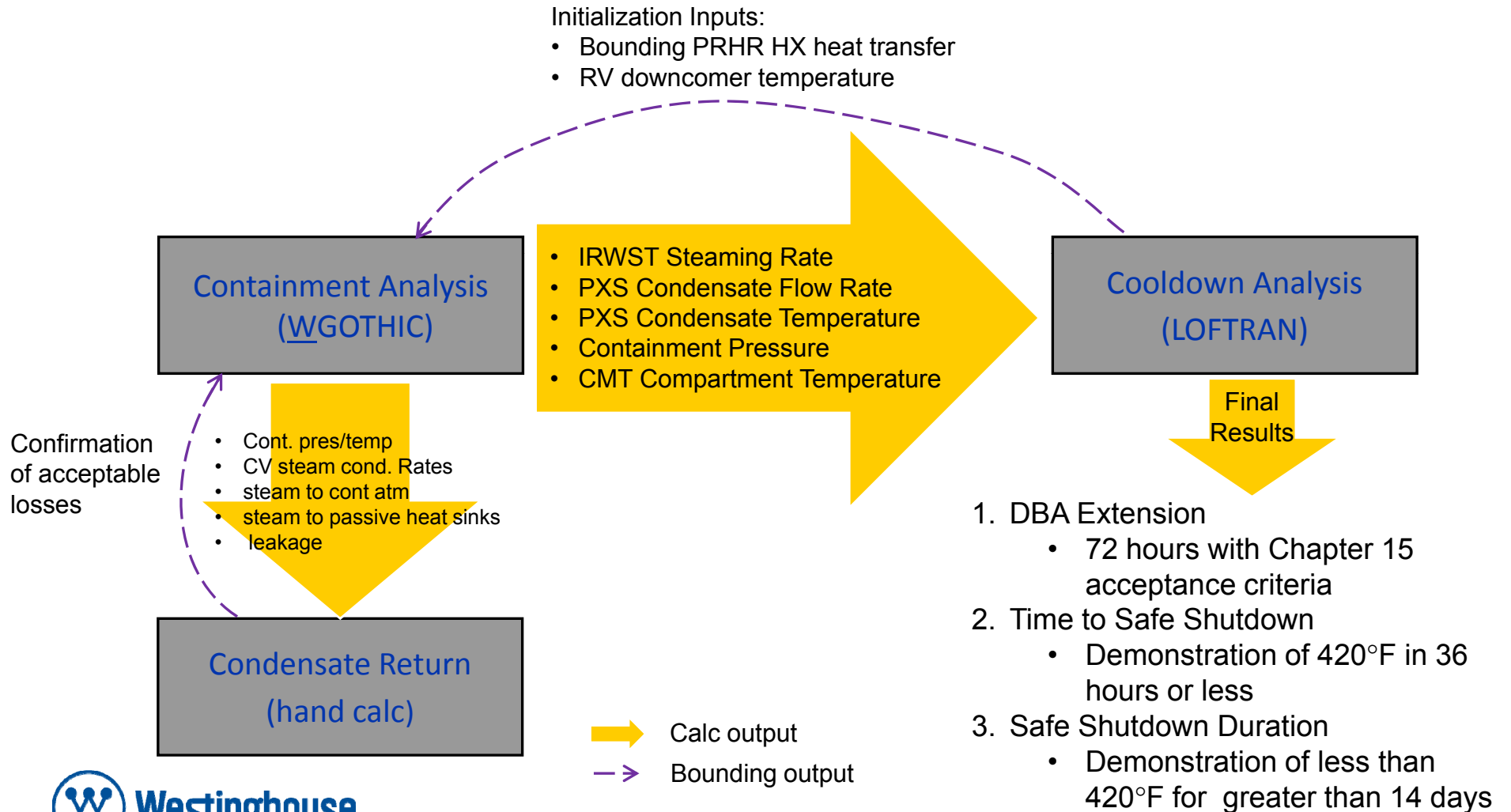


➡ Calc output  
 -➤ Bounding output



# Streamlined Analysis Approach

- Initialization Inputs:
- Bounding PRHR HX heat transfer
  - RV downcomer temperature



## Streamlined Analysis Approach - Benefits

- Reduction in exchanges between calculations
  - Limits error likely handoffs
  - Avoids the need for additional iterations
  - Limits the addition of unnecessary conservatism to bound each input
- Utilizes two analysis methodologies previously reviewed and approved by the staff
  - Benchmarked to integral system and separate effects testing
- Should improve ease of review for staff

**New approach has major benefits without sacrificing quality or margin**



## Status of CR Calculations

- DBA Extension
  - Calculations ready for NRC review 4/27
  - Preliminary results acceptable with respect to Chapter 15 acceptance criteria, including margin
- Time to Safe Shutdown
  - Calculations ready for NRC review 4/27
  - Preliminary results showing 420°F less than 36 hours
    - Change of acceptance criterion no longer expected
- Duration of Safe Shutdown
  - Discussed in subsequent slides

**Analysis completion supports NRC review in advance of Sept ACRS Mtg.**





# Root Cause Analysis

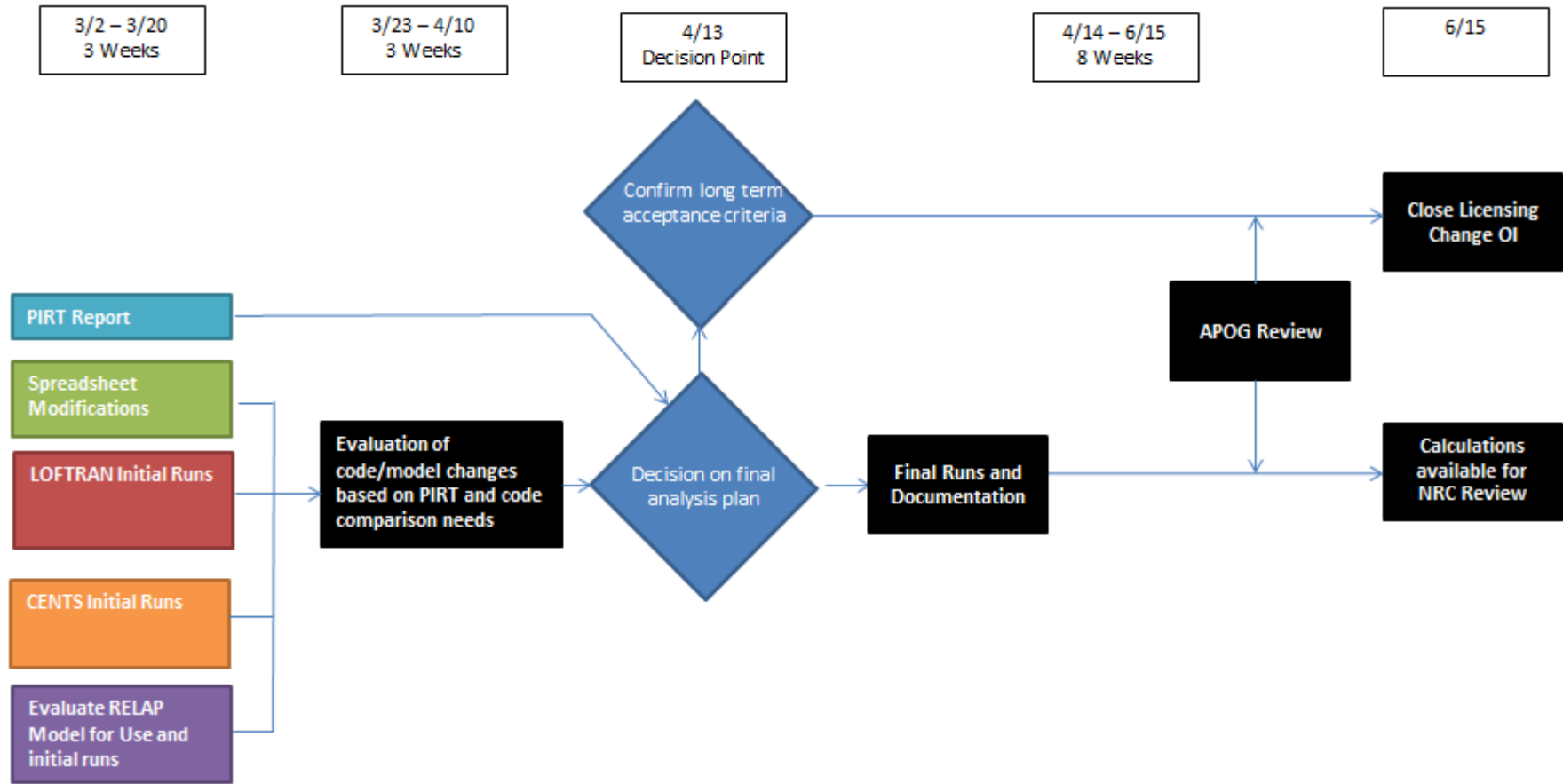
- RCA Completed on 3/9/15
- Problem Statement
  - Since 2012, multiple issues with the condensate return assumptions and analyses have been identified leading to the return rate being less than the 90% assumed and thus impacting long term PRHR operation
- Root Cause
  - The AP1000 design requirements process was not adequate to fully capture the design, licensing, or safety analysis basis requirements and flow-down of these requirements to the design.
- Corrective Action
  - Use Safety Analysis Input Knowledge data as an input requirements management tool for Safety Analysis. Develop a plan for safety analysis personnel and owners of parameters to verify parameters such that this can be used as an input requirements management tool, including addition of missing parameters from the DCD Chapters 6, 15 and 19E safety analyses.

**Application of existing tool to help  
resolve this issue**

## Root Cause Analysis - Continued

- Extent of Condition
  - *As a direct result of the detailed comparison between the spreadsheet and LOFTRAN calculations it was decided to reduce the complexity of the calculation methodology by having the WGOthic calculation directly feed into the LOFTRAN calculation without going through the two spreadsheet calculations first. This reduces the potential extent of condition by relying on two benchmarked, validated safety analysis codes. The inputs and assumptions are still analysis specific; therefore, they are being evaluated by the team to ensure consistency between the two calculations*
- This extent of condition assessment on the specific CR analyses will be documented as part of the RCA resolution actions

# Long Term Analysis Plan



Finalization of analysis process and justification of LOFTRAN for long term use are still in progress



## Submittal timeline

- Calculations for CR submittal complete – April 27th
- Levy submittal to NRC – May 11th
  - Also RAI 6.03-13 response to NRC
  - Open item for finalization of Safe Shutdown Duration
- Calculations for Demonstration of Safe Shutdown Duration complete – June 15<sup>th</sup>
- Levy submittal of open item closure – June 26th
  - Confirmation Activity: No changes expected to licensing change package
- NRC review of COLA change package in support of September ACRS meeting

Questions?

