



**Joint Regulatory/Pre-Decisional  
Enforcement Conference**

**Technical Support Center Habitability**

**Florida Power & Light Company**

**February 21, 2012**

## **List of Attendees**

- Michael Kiley, Vice President, Turkey Point
- Mark Jones, Operations Manager, Turkey Point
- Jose Garcia, Engineering Director, Turkey Point
- Christopher Domingos, Program Engineering Manager, Turkey Point
- Don Mothena, Director - Emergency Preparedness, Juno Beach
- Brian Carberry, Emergency Preparedness Manager, Turkey Point
- Robert Tomonto, Licensing Manager, Turkey Point
- Larry Nicholson, Director - Licensing, Juno Beach
- William Blair, Senior Attorney, Juno Beach
- Chuck Fazio, EPU HVAC Design Engineer, Turkey Point
- James Harrell, Consultant
- Sreela Ferguson, Consultant

# **Agenda**

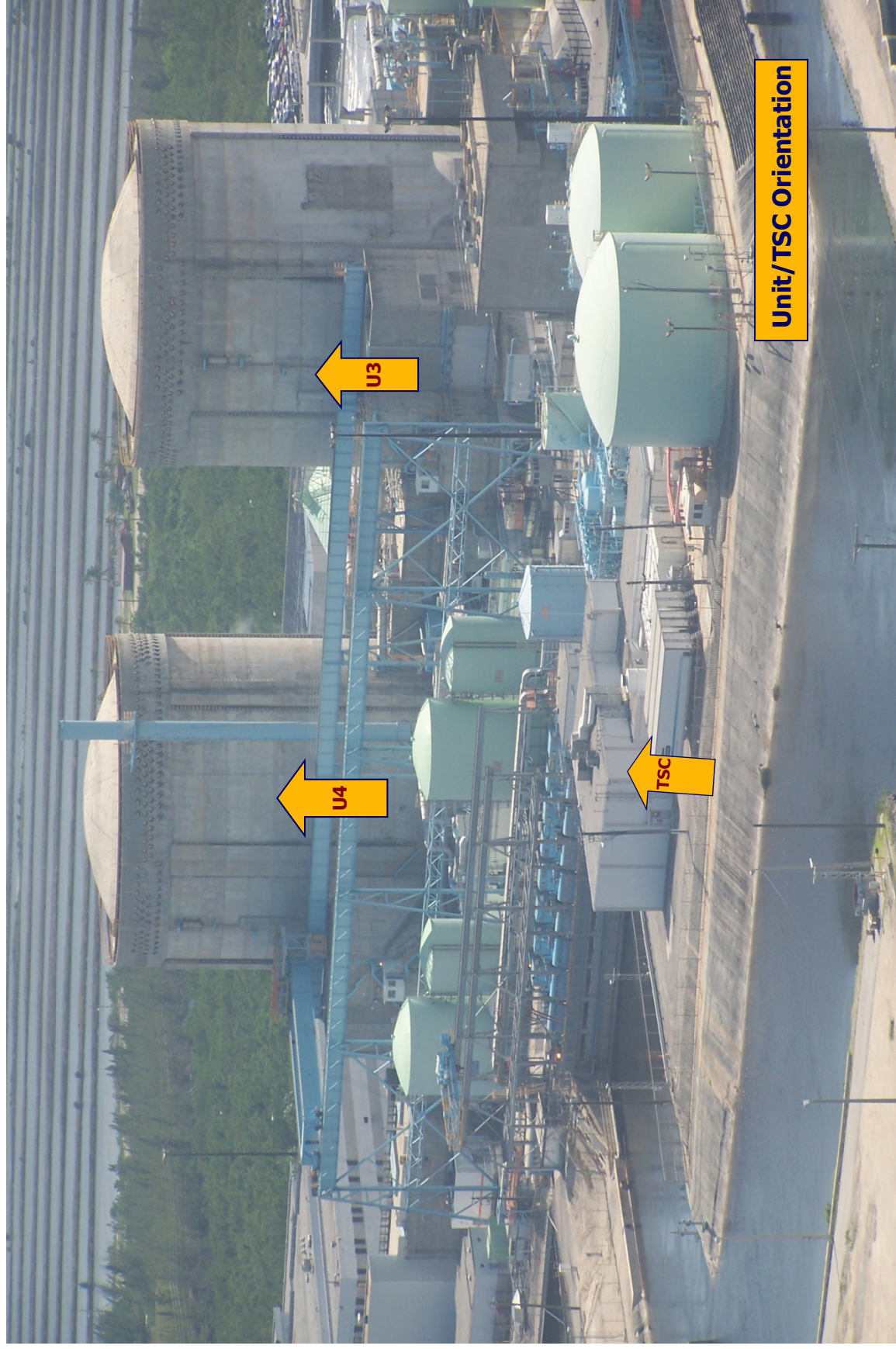
- Opening Remarks
- Background
  - System Description
  - 18 Day and 7 Month Events
- Timeline of Events
- Technical Support Center Functionality
  - Dose Analysis
- Apparent Violation
  - Apparent Violation One: 10 CFR 50.54(q)
  - Apparent Violation Two: 10 CFR 50.72(b)(3)(xiii)
- Corrective Actions
- Closing Remarks

# **Opening Remarks**



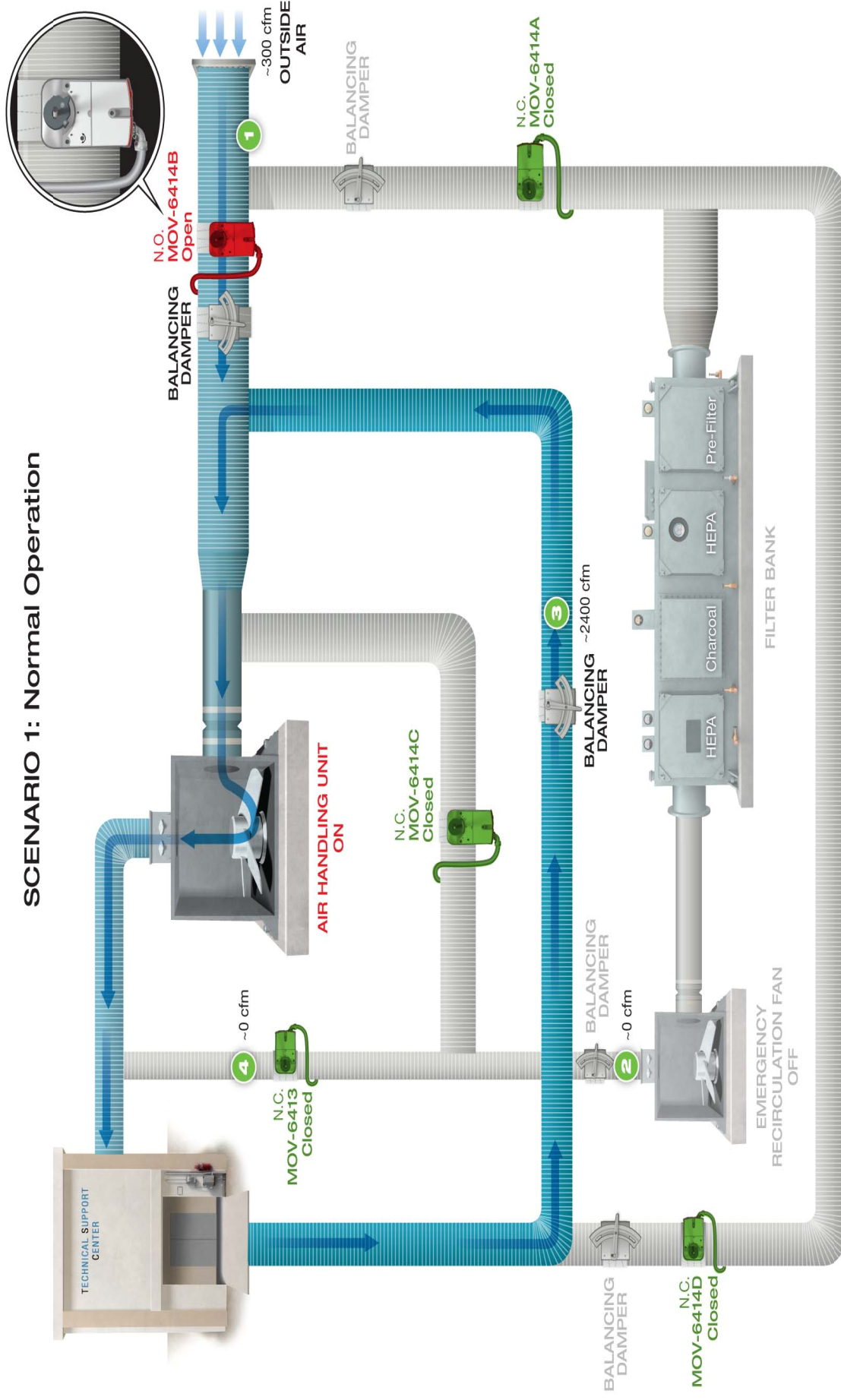


# Background – Aerial View



# Background - System Description

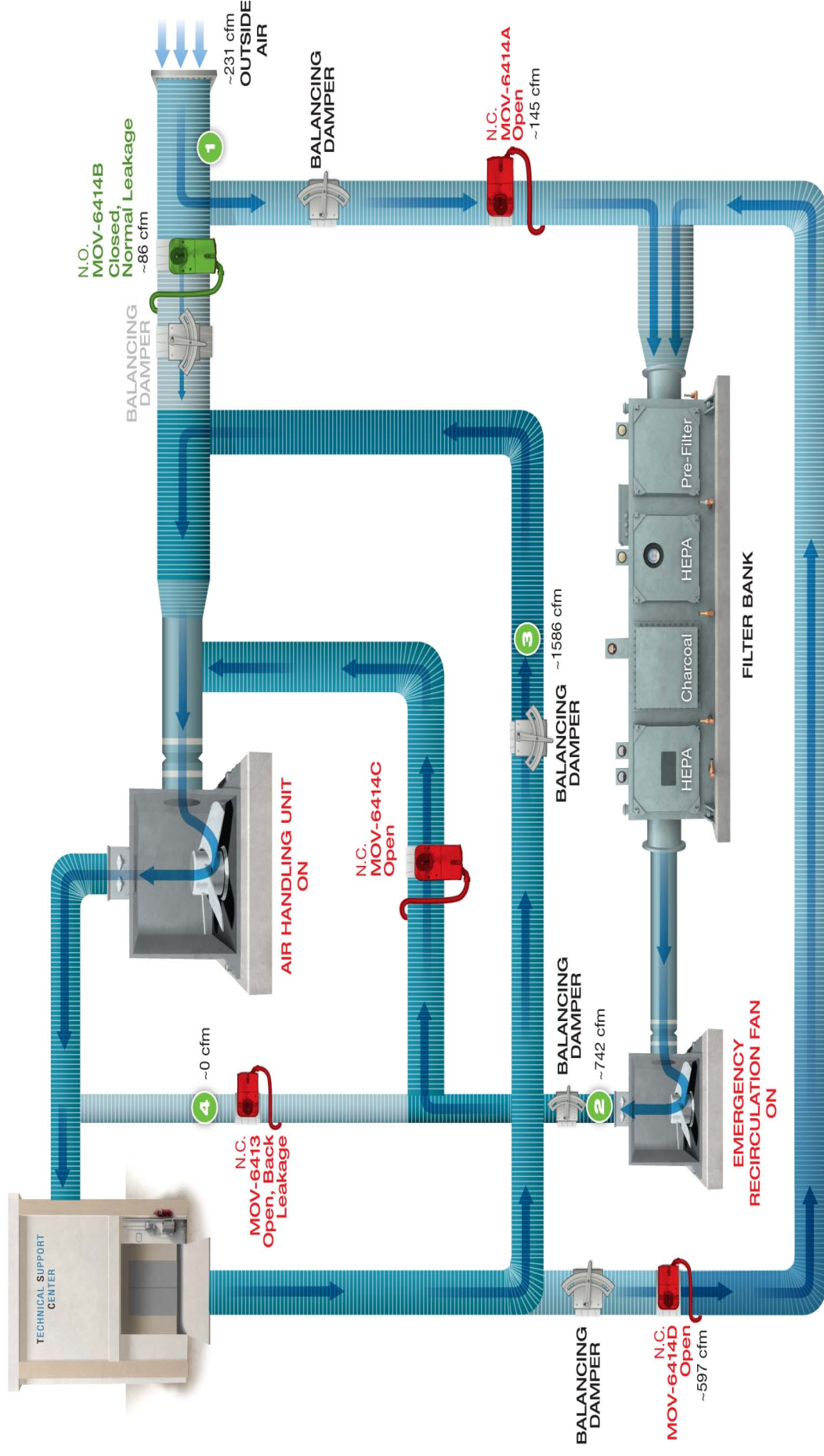
SCENARIO 1: Normal Operation





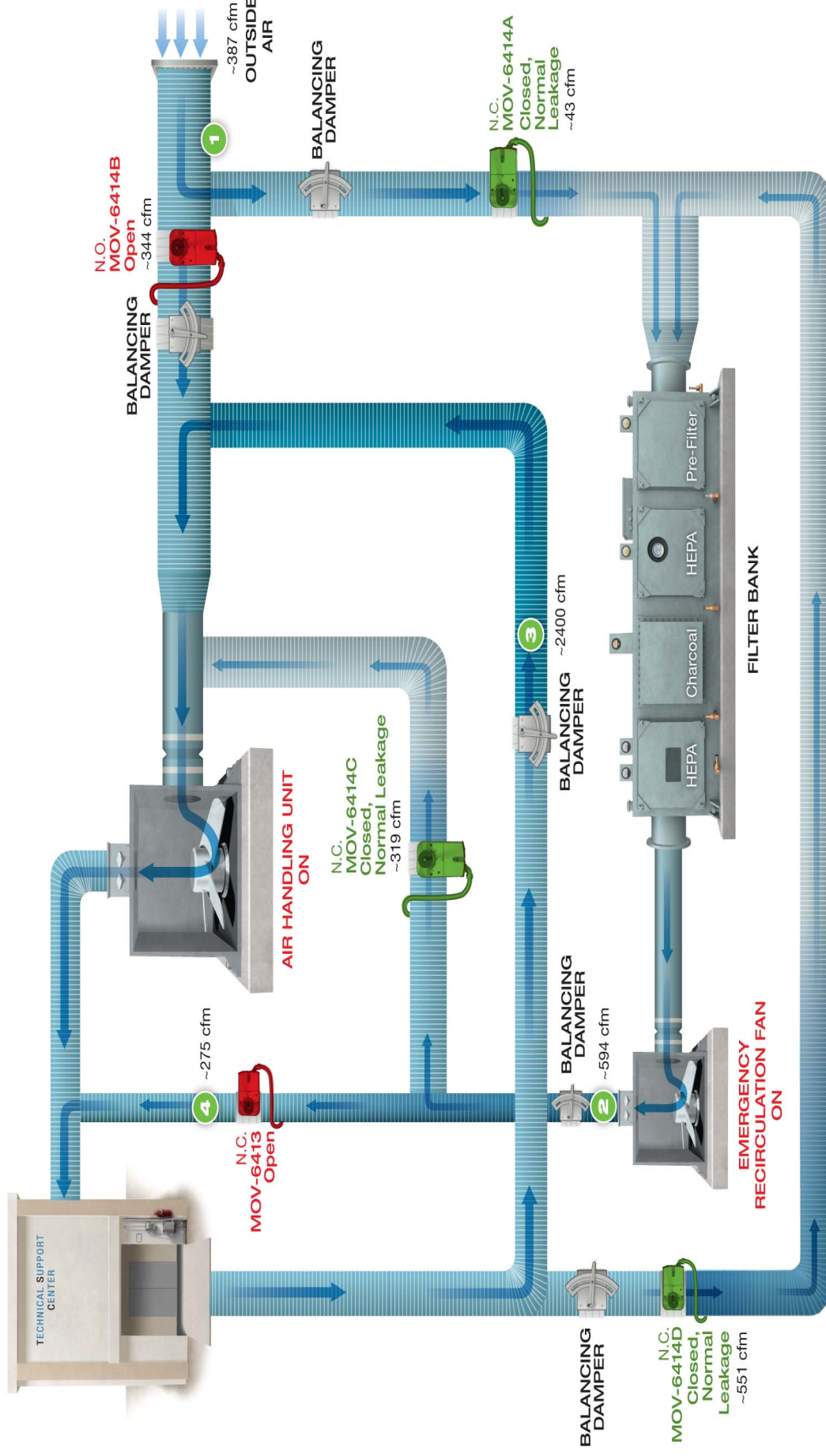
# Background - System Description

## SCENARIO 2: Emergency Operation



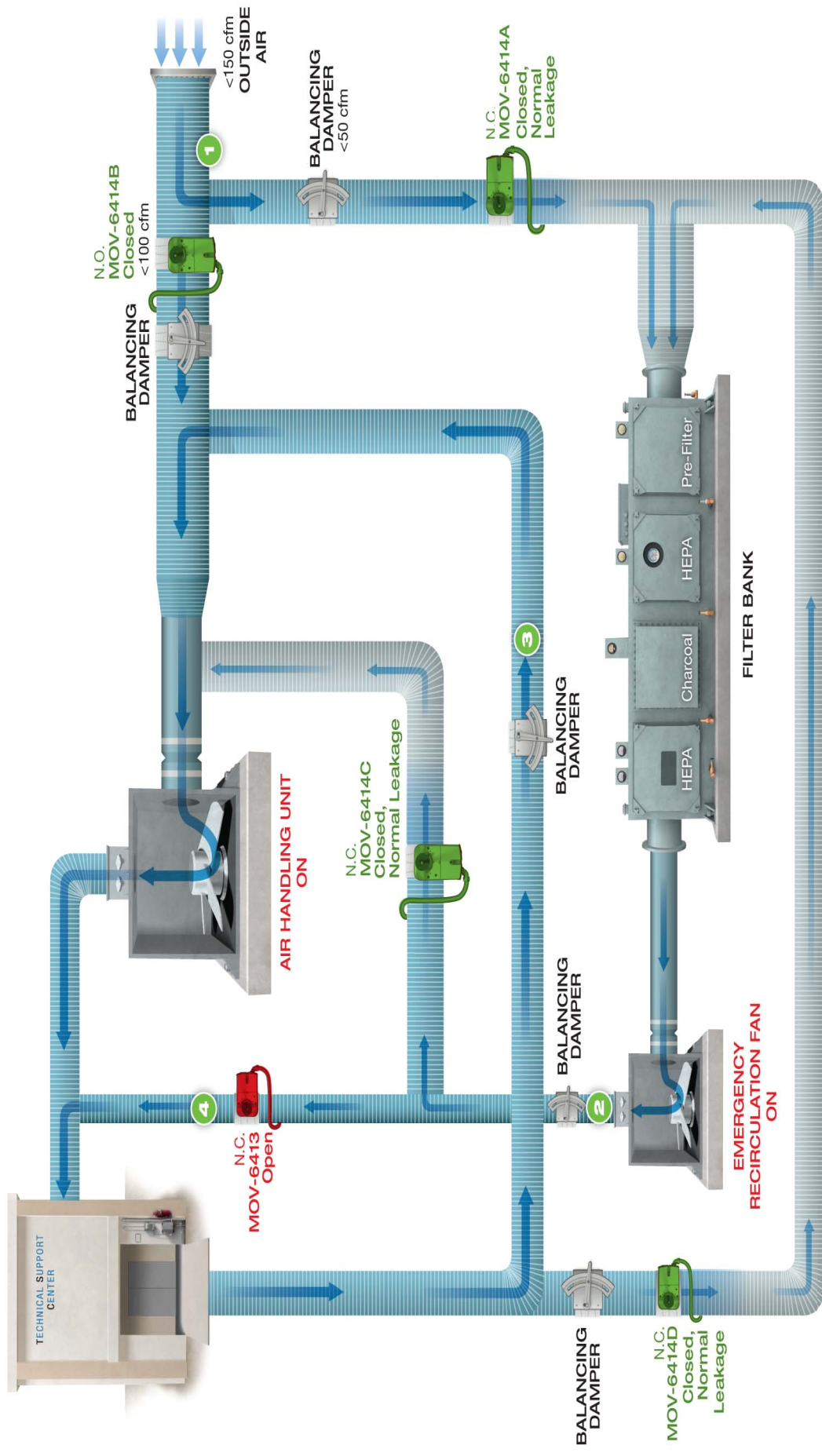
# 18 Day Event Configuration

SCENARIO 3: Emergency Operation Breaker Open (18-day period)



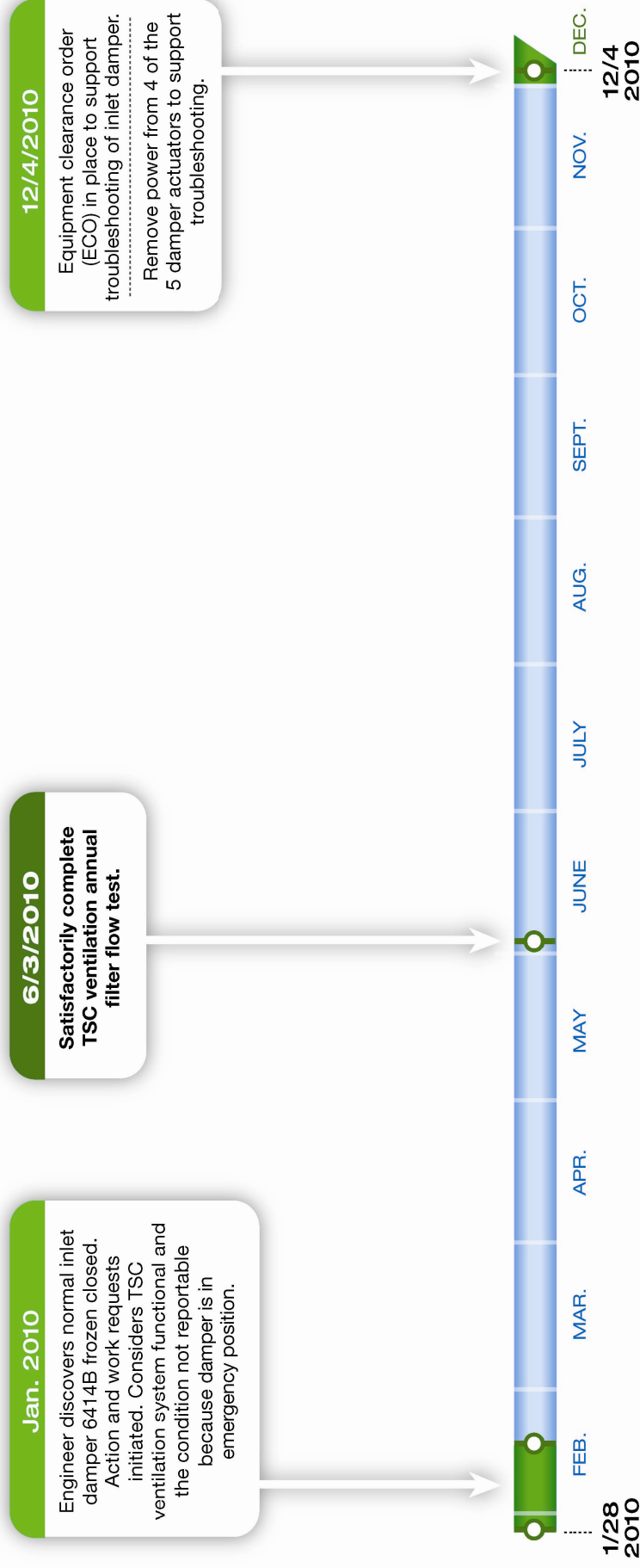
# 7 Month Event Configuration

SCENARIO 4: Emergency Operation Breaker Open & MOV-6414B Frozen Shut (7-month period)



# Timeline of Events

## TSC Ventilation Timeline 1/28/2010 to 12/4/2010

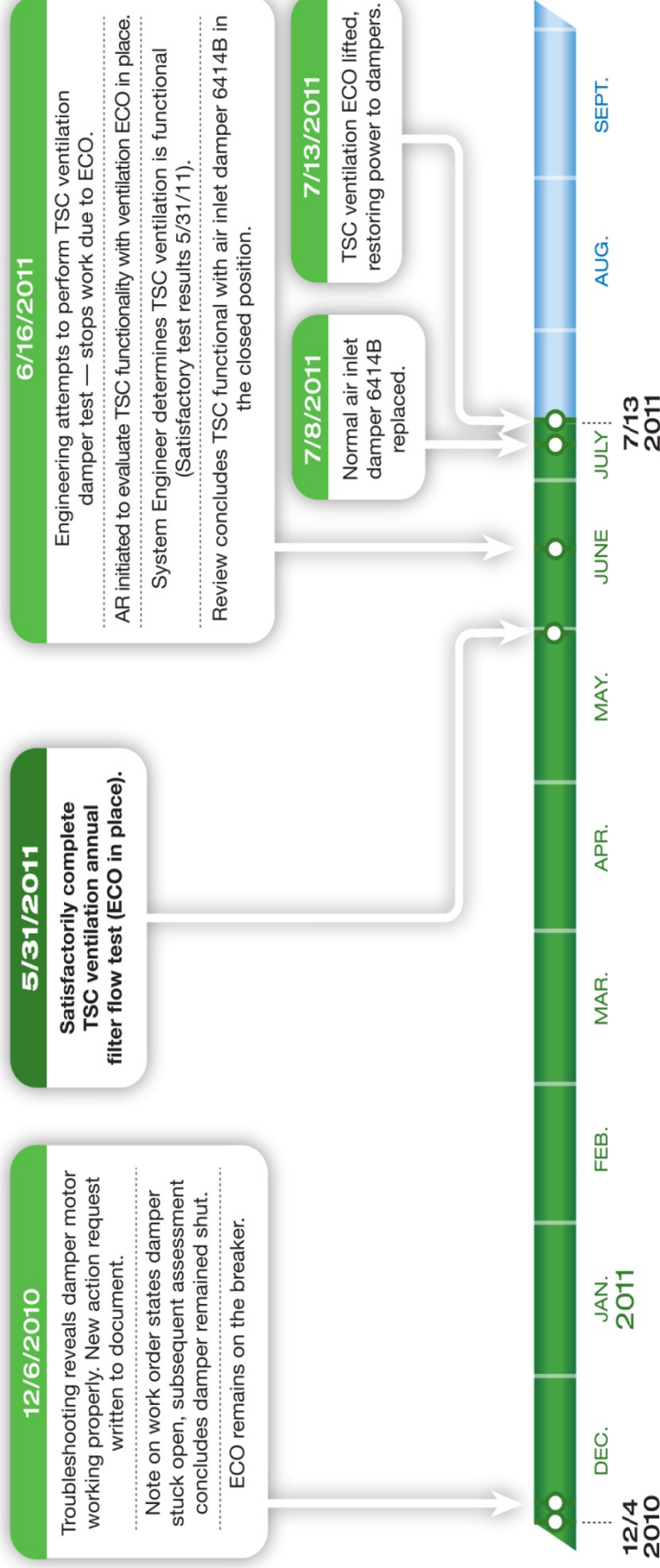




# Timeline of Events (cont'd)

## TSC Ventilation Timeline

7 Month Period: 12/4/2010 to 7/13/2011



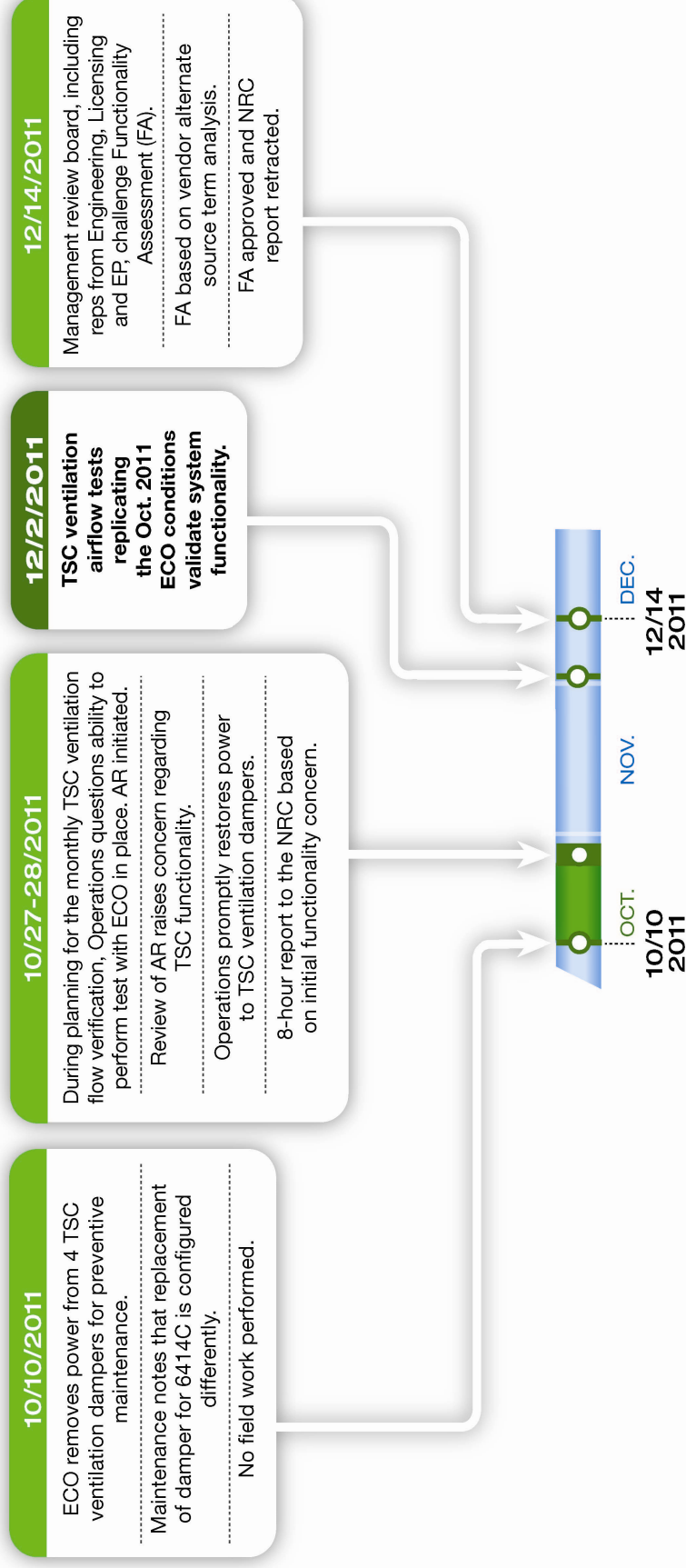
**The force of the recirculation fan is sufficient to provide adequate air flow through the TSC filter bank even though damper actuators were de-energized.**



# Timeline of Events (cont'd)

## TSC Ventilation Timeline

18 Day Period: 10/10/2011 to 10/28/2011





## **TSC Functionality - Habitability**

- **Per NUREG-0696, the following are TSC habitability criteria by which NRC evaluates compliance with GDC 19 requirements:**
  - Continuous radiation monitoring shall be provided in the TSC.
  - Sufficient potassium iodide shall be provided for use by TSC and Control Room personnel.
  - Radiological protection equipment shall be provided for personnel travel outside the TSC.
  - TSC ventilation system shall function in a manner comparable to Control Room ventilation.
  - TSC personnel shall be protected from radiological hazards.
- **The essential requirement for HVAC system performance capability is that TSC radiological habitability be maintained <5 REM whole body or its equivalent to any body part for the duration of the accident.**

## **TSC Functionality - Dose Analysis**

- **Both scenarios addressed by the following analysis.**
  - *Analysis updated to add conservatism and reflect new information.*
  - Analysis performed using Regulatory Guide (RG) 1.183 Alternate Source Term (AST) Methodology.
  - Same methodology as used for Control Room dose calculation.
  - Analysis by same vendor as EPU AST.
  - Third party independent review of analysis.

**Analysis results showed dose in TSC would have been less than 5 REM at any time during both time periods.**

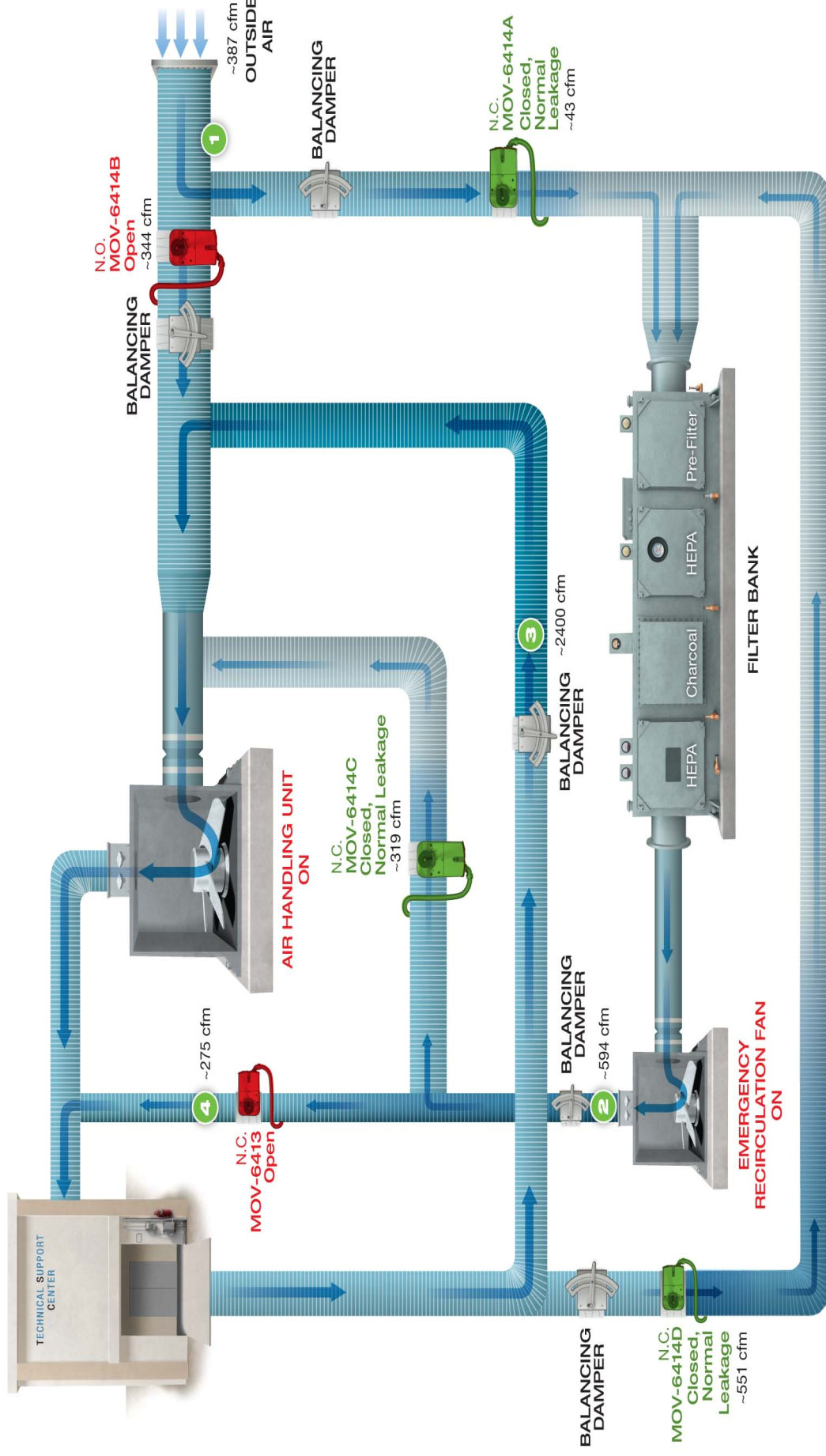
## **Dose Analysis Assumptions**

- Normal Air Inlet Damper 6414B – Assumed to be **open**.
- Accident Scenario – Design basis Unit 3 large-break LOCA (bounding analysis).
- Meteorological Data – Design basis X/Q meteorological dispersion factors.
  - Approved by License Amendments 244 and 240.
  - *Earlier analysis used 10/11-specific met data.*
- Source Term – Design basis source term at current licensed power level.
- Containment Leakage – Unit 3 worst case containment leakage (0.12%/day).
  - *Earlier analysis used actual Unit 3 containment leakage (0.082%/day)*
  - Bounds worst leakage in 40 years of operation for either Unit.
  - Bounds future acceptance criteria for ILRT at post-EPU conditions.
- ECCS Leakage – UFSAR design leakage.
  - Greater than double the actual measured ECCS leakage.
- Filtration – *Earlier 10/11 analysis assumed no filtration.*

**Bounding inputs are used for unfiltered air in-leakage, meteorological data and containment leakage.**

# 18 Day Event Configuration

SCENARIO 3: Emergency Operation Breaker Open (18-day period)



# Dose Analysis Results

## Dose Analysis Results

	TSC Functionality Dose Results (TEDE)
<b>TSC Personnel Immersion Dose</b>	
LOCA Containment Leakage	2.408 REM
LOCA ECCS Leakage	0.794 REM
LOCA Containment Purge Venting	None
LOCA RWST Vent	Negligible
<b>Total Immersion Dose</b>	<b>3.202 REM</b>
<b>TSC Personnel Shine Dose</b>	
Containment	0.012 REM
Containment via Equipment Hatch	0.369 REM
External Cloud	0.453 REM
TSC Filter Shine Dose	0.054 REM
Containment ECF Filters	0.060 REM
<b>Total Shine Dose</b>	<b>0.948 REM</b>
<b>Total TSC Dose</b>	<b>4.150 REM</b>

## **Dose Analysis Conclusion**

- Comprehensive and rigorous analysis using approved methodology.
- Input assumptions were either design basis or justifiable conservative.
- Results showed less than 5 REM to TSC personnel with margin.

**The essential requirement for TSC radiological habitability maintained <5 REM for the duration of an accident is met.**

## **Apparent Violation One**

- Summary of proposed violation
  - *Licensee failed to provide and maintain adequate emergency facilities and equipment to support emergency response when portions of the TSC ventilation were removed from service without compensatory measures.*
- FPL acknowledges a violation of 10 CFR 50.54(q) occurred in that during the above periods, portions of the TSC ventilation system were removed from service without performing the required evaluation or instituting compensatory measures.
- FPL contends that adequate facilities were provided and maintained during the periods from December 4, 2010 to July 13, 2011, and from October 10 to October 28, 2011.

## **Apparent Violation One – Discussion**

- 10 CFR 50.47(b)(8) requires that adequate facilities be maintained to support emergency response.
- Applicable regulations (NUREG-0737, GDC 19, NUREG-0696, etc.) establishes TSC requirement to maintain <5 REM whole body or its equivalent to any body part for the duration of the accident.
- Testing and dose analysis demonstrated that radiation exposure to any person working in the TSC would not exceed 5 REM whole body, or its equivalent to any part of the body, for the duration of the accident.

**During this time period, the TSC met 10 CFR 50.47(b)(8) Planning Standards relative to protection of personnel, and was therefore functional without compensatory measures.**

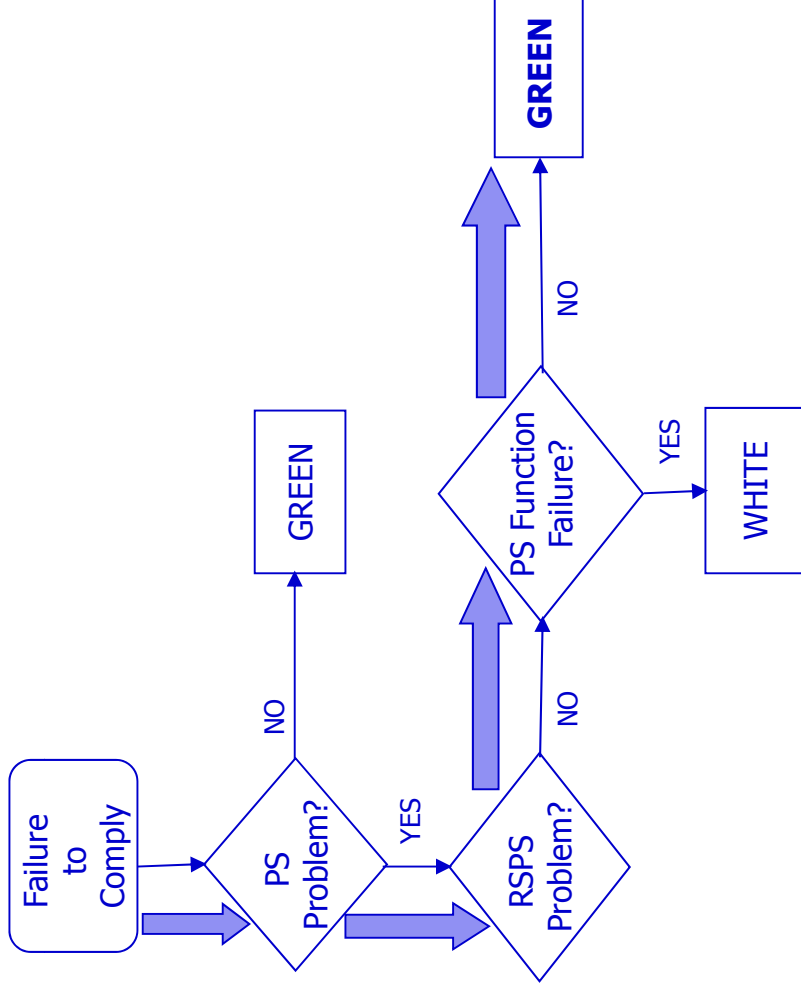


## **Significance of Apparent Violation One**

- NRC Manual Chapter 0609, Appendix B establishes the requirement to maintain adequate facilities as a planning standard (PS) of 10 CFR 50.47(b)(8).
- Section 4.8 of the above appendix provides guidance that a loss of PS function is a white finding and includes the following example:
  - *The OSC, TSC, or EOF is not functional for a period longer than 7 days from the TIME OF DISCOVERY, to the extent that any key ERO member (IAW NEI 99-02) could not perform his/her assigned Plan functions, in the absence of compensatory measures.*

## **Significance of Apparent Violation One (cont'd)**

- Dose analysis has confirmed that the ERO members could have performed their assigned Plan functions in the TSC, during the period of discussion, without the need for compensatory measures.
- The TSC PS function was not lost during this period.



## **Apparent Violation Two**

- **Summary of proposed violation**
  - *Tag out of portions of the TSC ventilation system from 12/4/2010 to 7/13/2011 rendered the TSC not functional, and therefore should have been reported as a major loss of emergency assessment, offsite response, and offsite communication capability (10 CFR 50.72(b)(3)(xiii)).*
- **Discussion Points**
  - Assessment in 12/10 concluded previous assessment remained valid; damper maintained in the emergency position (closed).
  - Reportability again assessed in 6/11. Decision made to not report based on inlet damper in its emergency position (closed) and satisfactory flow test.
  - Recent testing validated that adequate filtration was maintained to provide sufficient protection to the ERO in the off normal system configurations.

**The TSC was impaired but functional during the entire period, so therefore not reportable as a major loss of emergency response capability.**

## **Corrective Actions**

- **Root Cause**
  - Processes for performing maintenance on emergency facility ventilation rely too much on knowledge of the worker and do not have enough detail for consistent results.
- **Initial Corrective Actions**
  - Site communication of event.
  - Sign on TSC lighting panel and TSC HVAC control switch panel.
  - Revised EPIP 20132, Activation of the TSC.
    - Verify TSC ventilation is in operation.
  - EP review of emergent work requests.
  - Notation in tagging program.

## **Corrective Actions (cont'd)**

- **Corrective Actions Completed**
  - Revision to 0-ADM-213, Technical Specification Related Equipment and Risk
    - Operations screens work requests using Equipment Important to EP. The procedure lists preplanned compensatory measures.
  - New Procedure, 0-ADM-117, Equipment Important to EP
    - Procedure drives prioritization, ECO notification requirements, appropriate compensatory measures and an evaluation of functionality can be performed as needed.
  - EP routine review of work requests and upcoming surveillances.
  - Work management process identifies Equipment Important to EP.
  - EP at work week lookahead meetings to ensuring proper controls and compensatory measures are put in place.

## **Corrective Actions (cont'd)**

- New 50.54(q) fleet procedure (EP-AA-100-1007, Evaluation of Changes to the Emergency Plan, Supporting Documents and Equipment) includes a process for screening equipment using the guidance in RG 1.219.
- Formal process for Emergency Response Facility and equipment functionality assessment based on benchmarking.
- Appropriate work groups and departments trained in new process.

**Strong corrective actions have been implemented to ensure all equipment important to EP receives the appropriate prioritization, management oversight, functionality assessment and corrective action.**

## **Closing Remarks**

