

# Palisades Nuclear Plant

Trapped in Containment

August 6, 2008

Jack Giessner, RIII





- The Event
- Special Inspection Team - Insights and Findings
- Lessons Learned – Inspector Safety
- Questions





# Anatomy of an Accident

- “Accidents are almost always the cumulative result of a chain of apparently minor deviations from known standards, practices, and procedures.”

Hop Howlett II, Industrial Operator’s Guide

- This was an Event, not an Accident, that had many of the accident precursors present



# The Event (Background)

- Plant shutdown for maintenance
- Containment entry for visual inspection
- Second entry of the evening to finish inspection
- NRC IP 71111.20 for inspection





# The Event (Timeline)

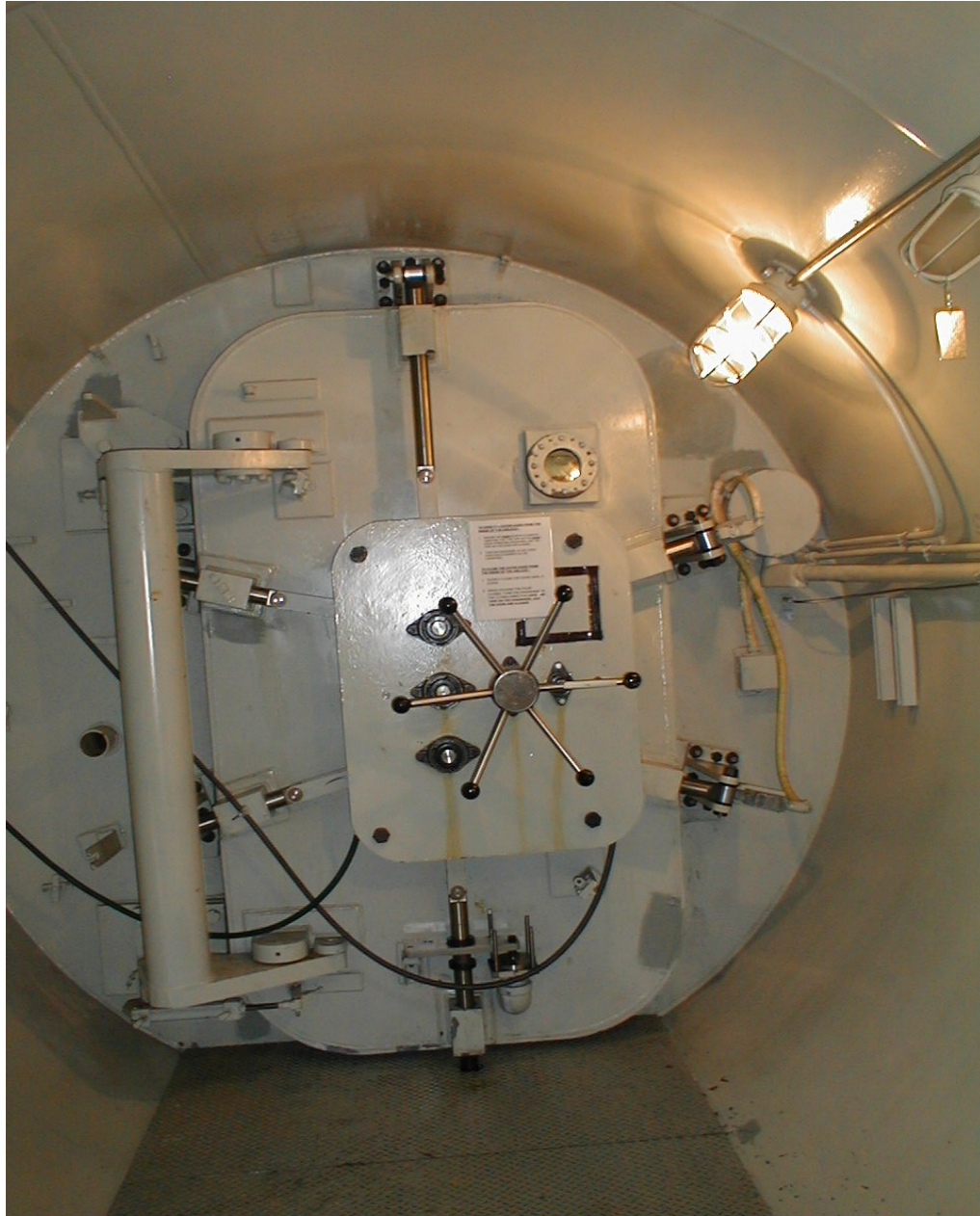
- August 5, 2008: 2000 - Reactor shutdown for control rod drive work
- 2100 First Containment entry for visual inspection, WBGT between 92-98 F – heat stress index 115 F
- August 6: 0025 Second entry of the evening to finish inspection (Stay time 30 minutes)
- 0030 Phone system goes down (unknown to team)
- 0040 Scaffold team exits, leaves outer door partially open (unknown to team)
- 0053 Airlock exit not successful
- 0100 Attempt at phone failed
- 0115 Escape hatch attempt fails
- 0130 Partial removal of Anti C's; water bottle use
- 0145 Cycle shield cooling pump discharge valve in attempt to notify CR
- 0155 Another team of scaffolders enters containment and team exits



## Personnel Airlock Inner Door



# Personnel Airlock Outer Door





## Escape Hatch



# The Event – Barriers Broken

- Failure to close outer hatch of Personnel Air Lock – lack of procedures; operator aid control
- Phone system down – no backup plan
- Escape hatch failed to operate – material condition; acceptance of deficient issues
- Heat stress control monitor – overall access control



# The Event – Barriers Remaining

- Actions to mitigate heat stress – bottled water; removal of Anti-C's
- Low Dose Area = Cool Area = Area near hatch
- Attempts to signal Control Room
- Timing/Luck – Another Group enters containment



**Accident does not occur**



# Special Inspection Team - Insights and Findings

- Containment Access Control – inadequate procedures
- Emergency Escape hatch not being maintained IAW design
- No procedure for operating the hatches + Training and operator aids ineffective for airlocks
- Heat stress control program – turned over to OSHA per MOU

# Lessons Learned – Inspector Safety

- High industrial safety risk evolutions
  - You CAN ensure your own safety
  - Spend time needed to understand the program (even if there is no direct tie to nuclear safety)
- High industrial safety risk programs
  - Confined space
  - Heat Stress
  - Fall Protection
  - Electrical Safety
  - Heavy Loads



# Lessons Learned – Inspector Safety

- Must be able to do your job – and you must be safe
- Think about surrounding and think about worse case contingencies











Next Week:

Callaway Disputed Violation