

# NRC Special Inspection Indian Point Energy Center

September 20, 2005 – February 28, 2006



## Contamination of Onsite Groundwater

Nuclear Regulatory Commission - Region I

Public Meeting, Peekskill, New York

March 28, 2006

# Agenda

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- Overview of Special Inspection
- Discussion of Dose and Dose Limits
- NRC Communications

# NRC Overview

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- Discovery and Initiation of Special Inspection
- Special Inspection Charter and Revision
- Scope of Special Inspection
- Results
- Next Steps

# Discovery and Initiation of Special Inspection

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- August 22, 2005 - Moist SFP crack first identified, nothing detectable
- September 1, 2005 - Contamination detected on swipe sample-NRC informed
- September 7-15, 2005 - NRC preliminary structural and radiological assessments performed
- September 12, 2005 - First liquid volume collected for analysis
- September 19, 2005 - Tritium detected from SFP crack leakage similar to SFP
- September 20, 2005 - Special Inspection Charter issued
- October 5, 2005 - Tritium contamination found in an onsite monitoring well (MW-111)
- October 7, 2005 - Special Inspection Charter revised

# Special Inspection Charter and Revision

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- Determine the facts and assess the conditions of the Unit 2 spent fuel pool leak
- Areas of Review: spent fuel pool structural strength, radiological sampling and dose impact assessment, and adequacy of Entergy's corrective actions
- Charter was revised to include investigation of groundwater contamination in the Unit 2 transformer yard (MW-111) and monitoring/control of the Unit 1 SFP leakage

# Scope of Special Inspection

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- Unit 2 spent fuel pool structural integrity
- Unit 2 spent fuel pool liner inspection for leaks
- Radiological assessment of bounding dose calculation
- Independent sampling of both onsite groundwater and offsite water locations
- Site groundwater transport characterization
- Previous samples and data reviewed for possible precursor conditions
- Unit 1 spent fuel pool leakage collection efficiency

# Inspection Results

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- No issues relative to Unit 2 spent fuel pool structural integrity
- Approximately 40% of pool liner inspected – no leaks identified, more to follow
- Bounding dose calculations continue to indicate that regulatory dose limits are being met
- The most recent estimated dose was approximately 0.1% of regulatory limits
- 3-way sample splits between New York State, the NRC, and Entergy confirmed no plant-related activity detected at offsite environmental sampling locations

# Inspection Results (Cont.)

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- Site groundwater characterization efforts are technically sound and provide useful information
- To date, no circumstances identified that reasonably should have led Entergy to earlier detection or prevention of current onsite conditions
- Unit 1 spent fuel pool drain system performance and efficiency are not completely understood. Continued efforts are necessary to assure that all leakage is accounted for and effectively handled
- The cause of the onsite conditions and corrective actions are being pursued in a reasonable manner. Efforts to determine source(s) of contamination and effect mitigation or remediation are progressing.



# Next Steps

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- Continue to assess Entergy's performance, effectiveness, and diligence relative to resolving the source and extent of this groundwater contamination
- Recognizing the evolving nature of this investigation, take appropriate regulatory actions as warranted by inspection findings
- Continually assess dose consequence, regulatory compliance and impact to public health and safety
- Evaluate onsite and offsite groundwater monitoring plans to assure early detection of contamination

# Summary Of Current NRC Assessment

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- Based on current information, public health and safety has not been, nor is likely to be, adversely affected.
- The source(s) causing ground water contamination have not been positively identified.
- The NRC will continue regulatory oversight of Entergy's efforts and activities to resolve the condition. A follow-up NRC inspection report will provide final conclusions.
- Since discovery, Entergy's response has been reasonable and technically sound.
- NRC is reviewing generic implications of groundwater contamination.

# Radiation Dose Perspective

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- Background (est.) 360 mrem/year (NCRP 94)
- Public Dose Limits 100 mrem/year (10CFR20.1301)  
25 mrem/year (40CFR190)
- Liquid Effluent Limit 3 mrem/year, total body  
10 mrem/year, organ (10CFR50, App. I)
- Estimated Dose Rate 0.0034 mrem/year, total body  
0.01 mrem/year, bone
- EPA drinking water limits (40 CFR 141.16)
  - Tritium (H-3) 20,000 pCi/L
  - Strontium (Sr- 90) 8 pCi/L

(EPA maximum contaminant level based on 4 mrems per year)

# NRC Communications

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- Lessons learned
- Corrective actions
- Communication efforts going forward