International Collaborative Project to Evaluate Fire Models for Nuclear Power Plant Application

5th Meeting May 2002

"Use of Fire Models in Risk Analysis for Nuclear Power Plants"

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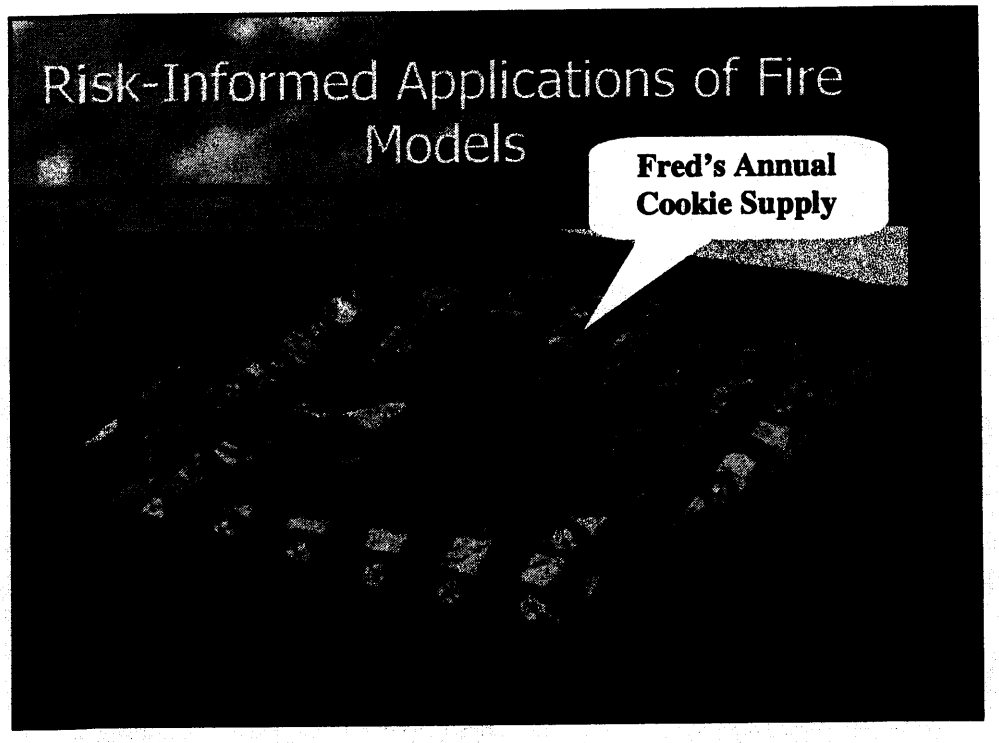
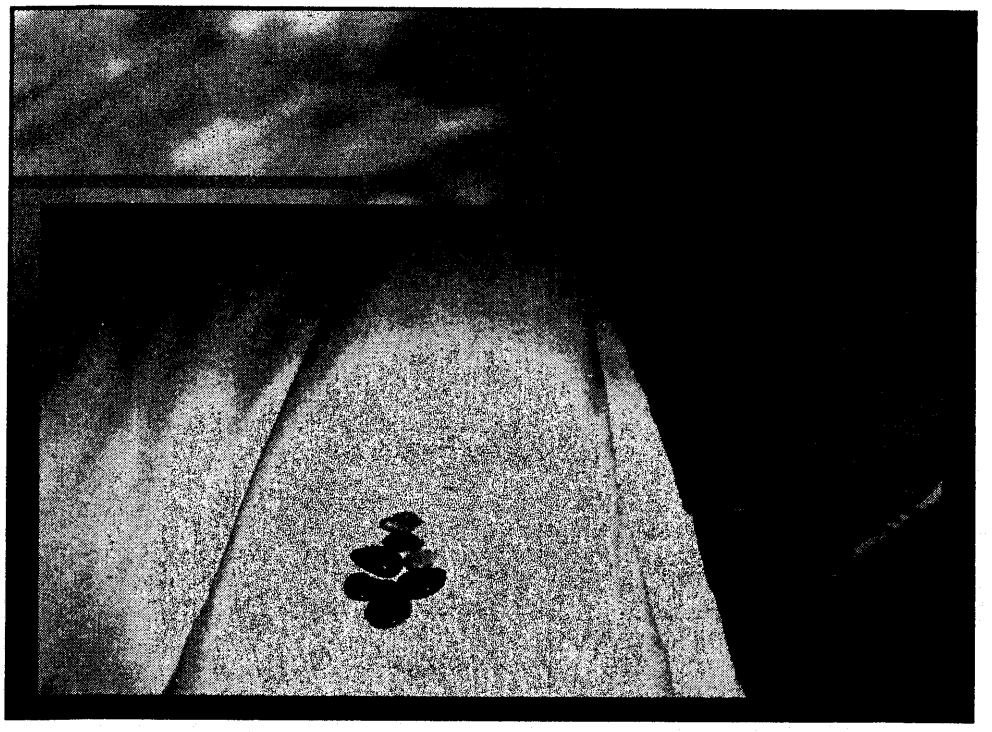
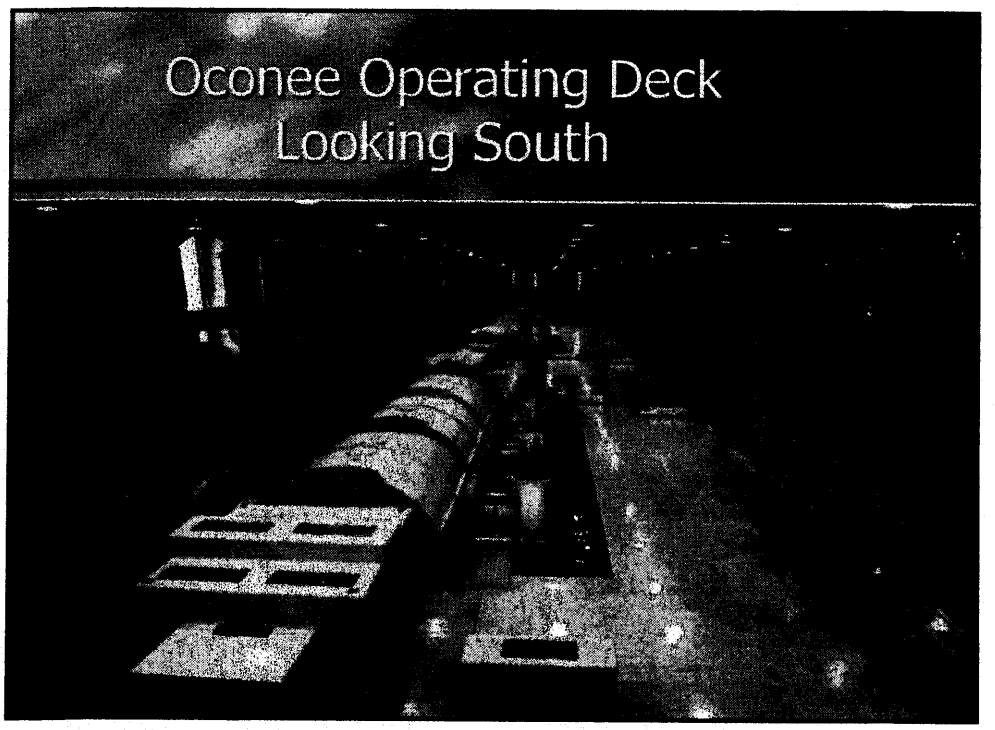
Risk-Informed Applications of Fire Models



Example

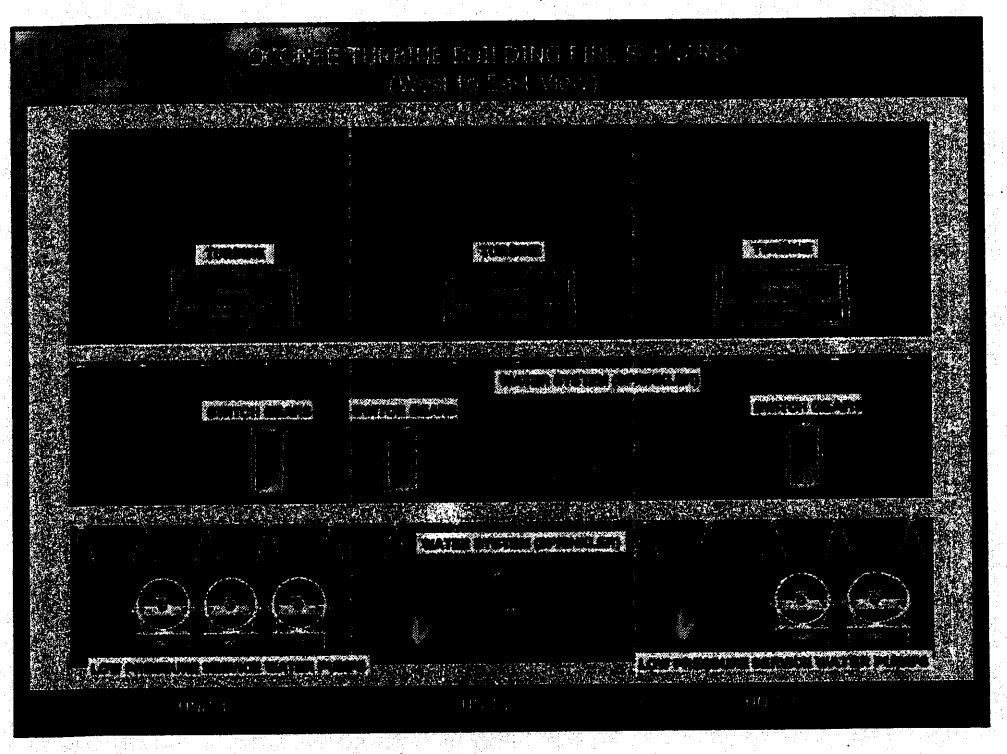
Oconee Nuclear Station Turbine Building Fire Scenario

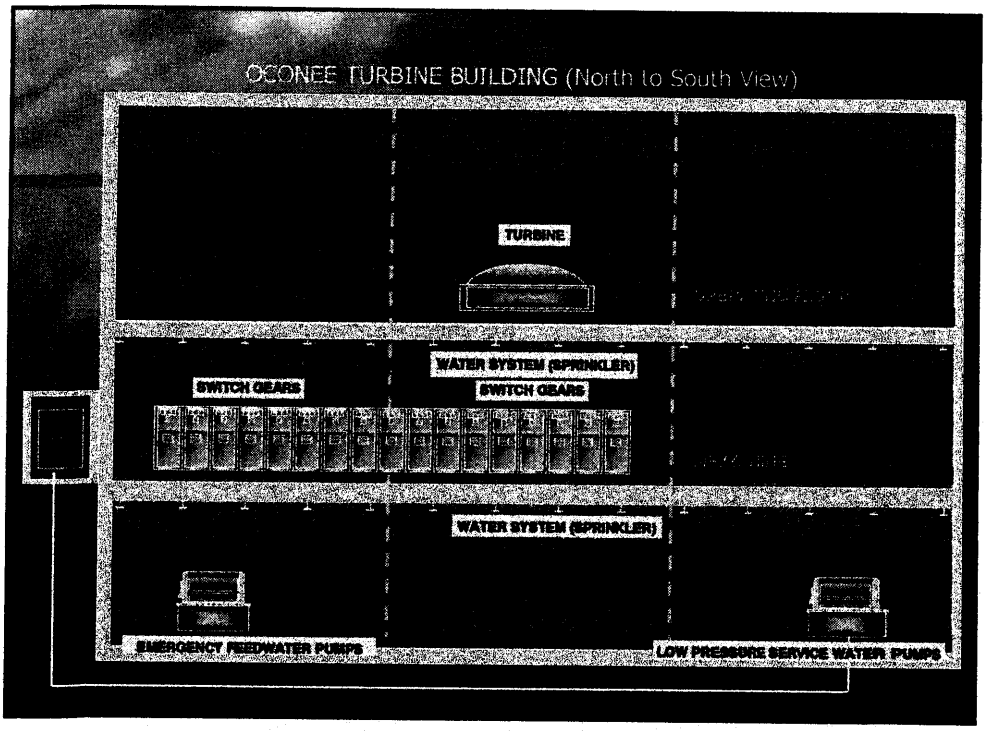



Oconee Operating Deck
Looking South

Current State

Postulate that Fire Propagates throughout





Future State

Fire Scenario Develops Realistic Fire Propagation Scenarios

With Suppression

Without Suppression

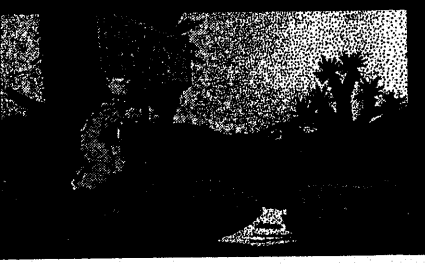
What Can You Do For Me

Conduct Research

Develop Computer Models

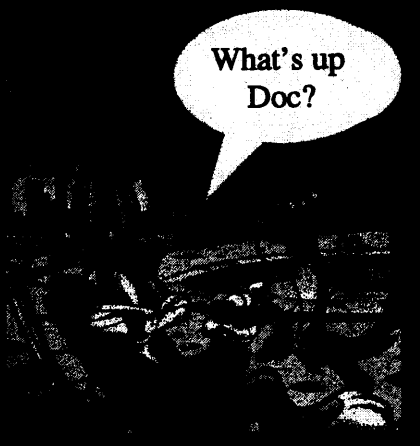
Translate Research and Scientific Code Language to "Low end" Engineering Language

Validation Guidance



What Can I Do For You

Provide Understanding of End Users Needs / Expectations



What Do I Need

- Simple input menu
- Understanding of input sensitivities
- Comprehensible users manual
- Understanding of validation
- Understanding of "degree of precision"
- Understanding of results

Additional Needs

- Regulatory Acceptance
- Benchmarking between models
- Simplification for use in SDP

What Do I Want

Simple User Input Menu

Graphics are Great

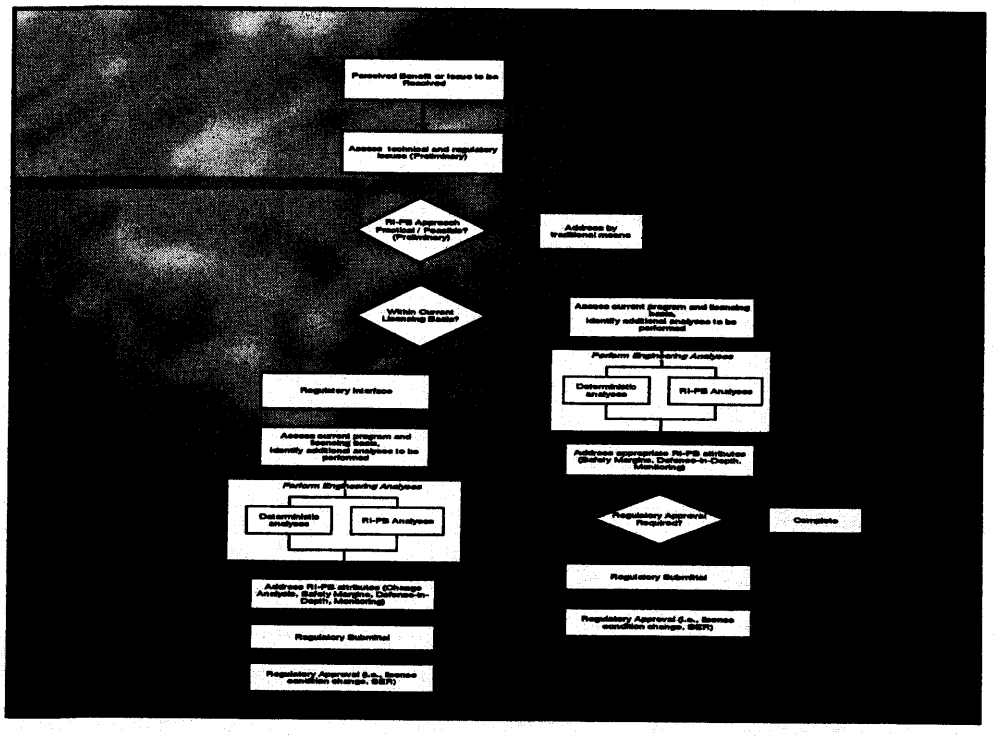
Coherent Output

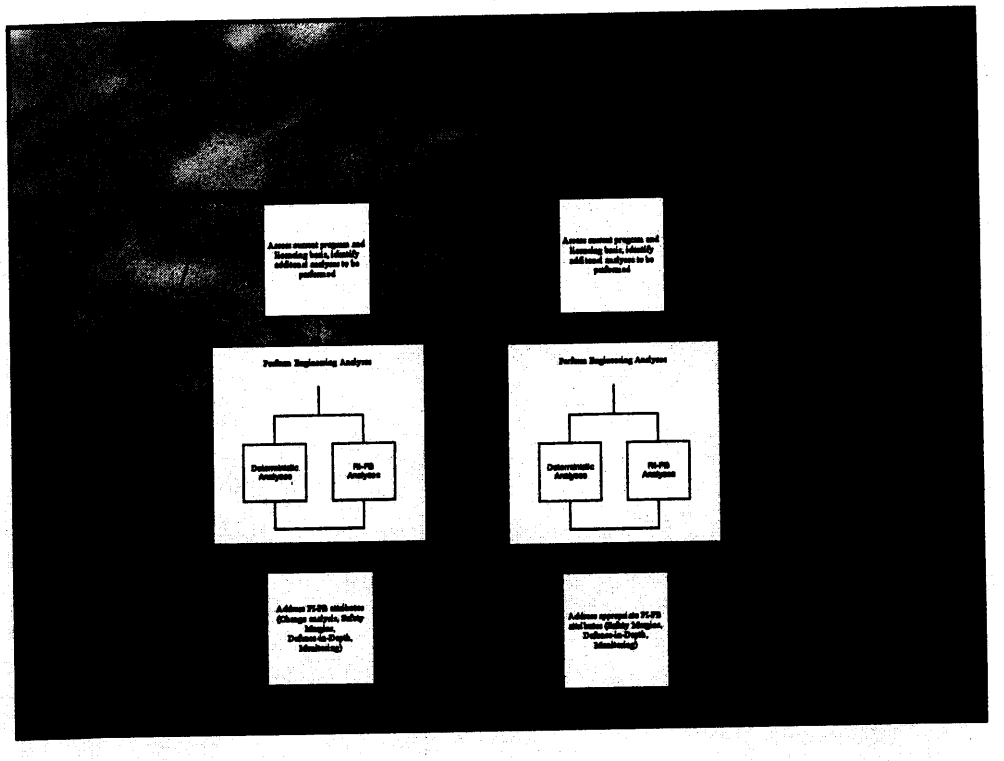
What Have I Seen

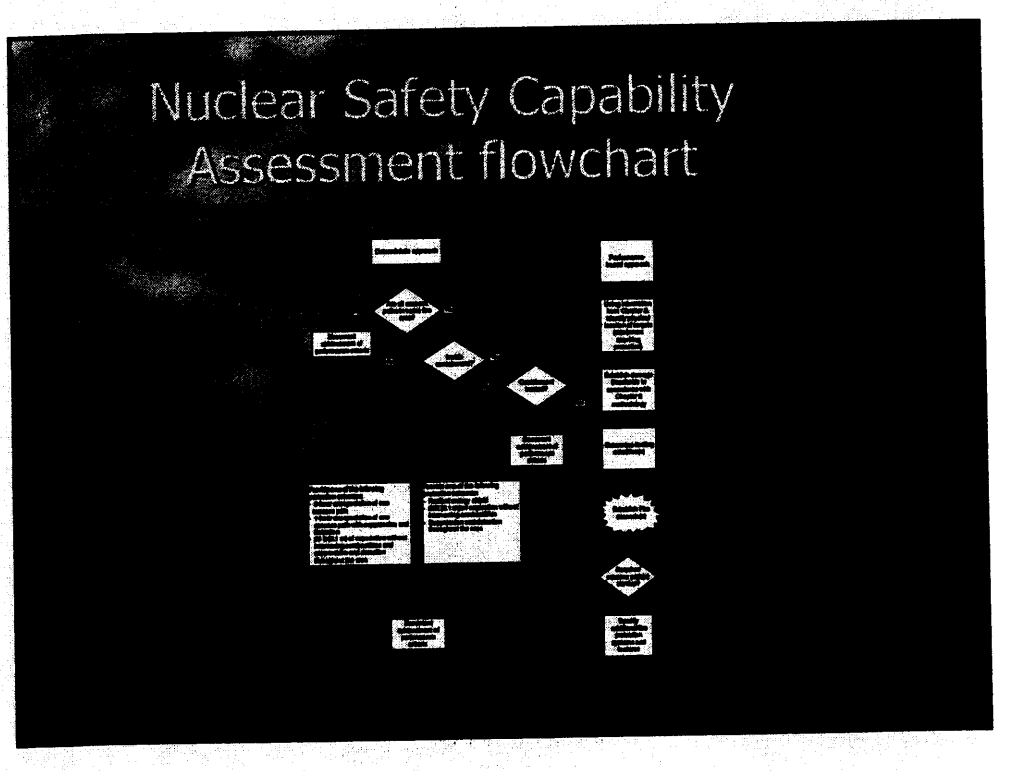
FireDoc in a Cave
ASET in a Atrium (Mall)
Hazard1 in a Turbine Hall
FiresT3 w/ 1M degrees heat transfer

Potential Benefits

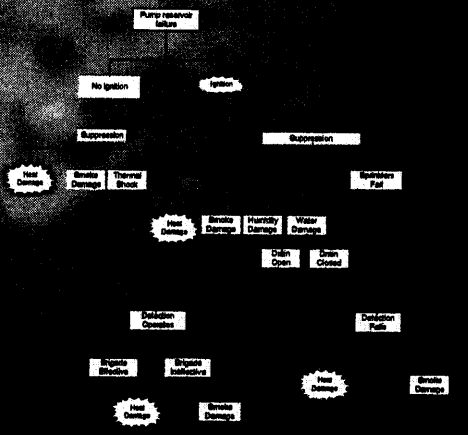
- Increase employment for Fire Protection Engineers
- Save $$$$$$$$
- Increase confidence in decisions
- Increase focus on safety






Nuclear Safety Capability
Assessment flowchart

Fire Event Tree



Conclusion

- This research initiative has potential to increase our understanding of the fire hazards in operating Nuclear Power Plants