

# Discussion of HRA in a Fire Probabilistic Safety Assessment (PSA)

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# Extension of Existing Human Reliability Analysis (HRA) for Fire Scenarios

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- Two areas of HRA consideration
  - HRAs in the current internal events PSA
    - ◆ Control Room actions
    - ◆ Outside the Control Room
  - HRAs due to fire impact
    - ◆ Recovery actions
    - ◆ Equipment mitigation actions

# Extension of Existing Human Reliability Analysis (HRA) for Fire Scenarios

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- For existing HRAs
  - ▶ Similar approach as discussed in NUREG/CR 6850 Chapter 12
  - ▶ Determine if success is possible
  - ▶ Adjust value based on location
  - ▶ Adjust value based on timing and other inputs such as training (0-30 minutes, >31 minutes)

# Fire HRA Considerations

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- For existing HRA as discussed in NUREG/CR 6850 there are many inputs to determine if success is possible such as:
  - ▶ Number of operators available may change due to the fire
  - ▶ Location of operator actions outside the control room compared to fire and smoke interaction
  - ▶ Change in time available or response time

# HRAs Due To Fire

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- Initial screen value for fire mitigating actions is no credit
  - If no Core Damage Frequency (CDF) impact do not model
- If CDF impacted, develop HRA using same process as internal events
- Non-mitigating HRAs to be evaluated separately

# Results of Fire HRAs

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- Final PSA model will have two sets of Operator actions
  - ▶ PSA model without fire
  - ▶ PSA model with fire
  - ▶ Evaluation of success will have different results