Lockheed Martin Corporation
Sandia National Laboratories

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Independent Verification & Validation

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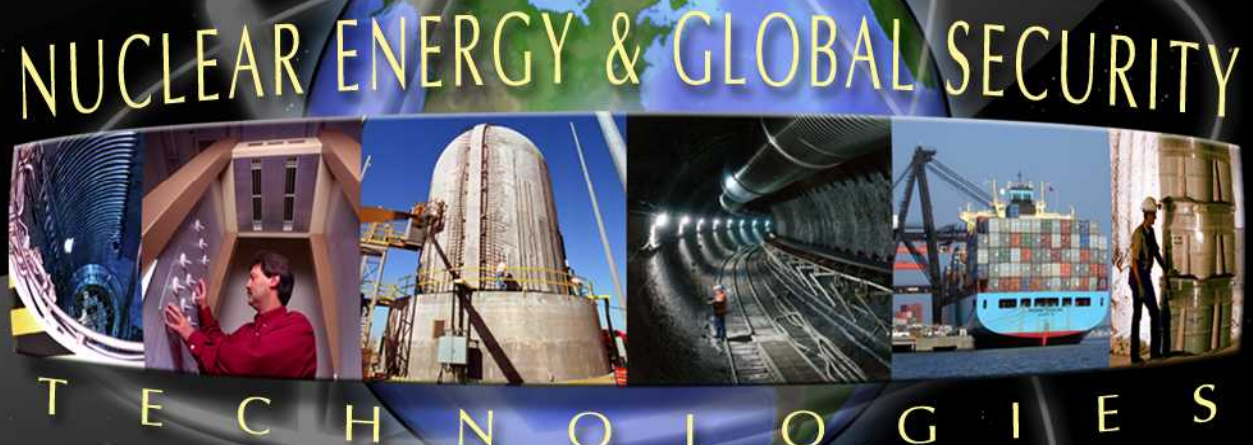

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy's National Nuclear Security Administration

under contract DE-AC04-94AL85000

Why Independent Verification & Validation (IV&V)?

- **The consequences from a severe accident at a nuclear power plant can be unacceptably large**
  - **Loss of life, injury**
  - **Damage to the environment**
  - **Property loss**
  - **Remediation costs**
  - **Fines**
  - **Damage to reputation**

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Why IV&V?

- **Generation III Reactors are first of a kind**
  - **new design, beyond state-of-the-art**
  - **lack a long-term operating record**
  - **data and analyses cannot be 100% accurate (uncertainties exist)**
  - **decisions and interpretations have a significant impact on performance**

- **How can safety be assured?**

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Why IV&V?

- **IV&V is an in-depth critique of data, assumptions, calculations, uncertainties, extrapolations, alternate interpretations, methodology, acceptance criteria, and conclusions**
- **IV&V confirms the adequacy of work**
- **IV&V relies on people with technical expertise representing the spectrum of knowledge and experience in the subject to be reviewed**
- **IV&V reviewers are independent from the work being reviewed**

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Why IV&V?

- **Increases confidence and acceptance by the scientific community, governmental bodies, and public**
- **Considered critical to establishing a reliable body of research and knowledge**
- **Passes judgment on technical adequacy**
- **Identifies aspects that are incorrect or need amplification**
- **Catches errors and weaknesses before they are implemented in a design**

Without IV&V risk of failure is increased

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Value of IV&V

- **Relies on the independence and qualifications of the reviewers**
- **Sandia is uniquely qualified to lead IV&V of CAP1400, for example**
  - **Sandia conducting AP1000 accident progression analyses using MELCOR for another customer**
  - **Sandia concerned scaling AP1000 may affect heat flux through reactor vessel to passive cooling system**

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With IV&V risk of failure is decreased

- **Increases confidence and acceptance by the scientific community, governmental bodies, and public**
- **Considered critical to establishing a reliable body of research and knowledge**
- **Passes judgment on technical adequacy**
- **Identifies aspects that are incorrect or need amplification**
- **Catches errors and weaknesses before they are implemented in a design**

Sandia is uniquely qualified to assist with IV&V of Generation III Reactors

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