**Project Assessment**

**Review of the Draft Report**

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Please, grade the pieces of evidence that students have achieved intended learning outcomes:

**0** – no evidence is provided.

**1** – some evidence is provided; however, concluding that the intended learning outcome has been achieved is impossible, and significant added work is necessary.

**2** – additional pieces of evidence and some minor improvements would be beneficial for making a positive conclusion that the intended learning outcome has been achieved.

**3** – supplied evidence is sufficient to conclude that the intended learning outcome has been achieved. No added evidence or work is necessary.

**In the assessment, you should consider the intended learning outcomes of the course:**

After the course, you shall understand the principles, issues, and tools in nuclear power safety. This aim is achieved if you show that you can:

1. Define key elements of the nuclear power plant design and safety features,
2. Explain the principles of nuclear reactor operation and control,
3. Develop a simplified design and perform an analysis of
   * (a) nuclear reactor core,
   * (b) primary systems,
   * (c) balance of plant.
4. Reflect on nuclear core design constraints in terms of limiting important operating parameters such as
   * (a) Critical Heat Flux (CHF),
   * (b) maximum cladding and fuel pellet temperature.

ILO1 and ILO2 require *declarative* knowledge of critical elements of the nuclear power plant and *functioning* knowledge of why different elements are needed to ensure efficient and safe plant operation.

ILO3 and ILO4 are focused on the development of *high-level* *functioning* knowledge. The task will require students to develop and practice critical thinking in selecting adequate assumptions and approaches to calculate plant elements and critical parameters.

**Review of the Project Group:**

**Group Code: AP1000 51**

**Full title: AP 1000**

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| Intended learning outcome  (ILO) | Grade  (0-3) | The explanation for the grading of the evidence of achieving respective ILO.  Suggestions for improvements and other comments |
| 1. *Collect information on* the General design specification of the nuclear power plant with selected reactor type (Task 1, ILO1, ILO2) | 2 | A better description of BOP is needed, especially since the schematics figure must follow the design description.  Missing this:” Fuel rods are pressurized internally with helium during fabrication to reduce clad creep down during operation and thereby prevent clad flattening.”  A more detailed picture of the setup and the internals is needed. |
| 2. *Describe* the Operational principles of the power plant. (Task 2, ILO1, ILO2) | 2 | Some values are wrongly presented with symbols like “?” and “!”. |
| 3. *Explain the* Safety features of the power plant. (Task 3, ILO1, ILO2) | 3 | Overall good.  However, a concise approach to an explanation would have been nice.  A brief knowledge of “design basis accident” is appreciated. |
| 4. *Calculate* Selected core parameters (Task 4, ILO3) | 3 | The units of mass flow rate are in m3/h, so it should be mentioned in the literature as we perform nodalization calculations in SI units. Mass flow should be kg/s by considering the densities from XSteam libraries. |
| 5. *Calculate* CHF margins in a hot channel (Task 5, ILO4a) | 3 | A brief explanation of CHF and DNBR.  Shouldn’t the height be the abscissa/x-axis in Fig. 13? |
| 6. *Calculate* Maximum cladding and fuel pellet temperature (Task 6, ILO4b) | 3 | Overall good. |