SH2705 Compact Reactor Simulator- Exercises in Reactor Kinetics and Dynamics

Peer Review of the Theoretical Report from Group 2

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1 Introduction

In this report, we present the peer review of the theoretical report from group 2 which discusses concepts of nuclear power safety in the context of the Narora fire accident. In this peer review, we firstly assessed whether the report complies with the scope of the assigned task. We also examined whether there were any major or minor issues with the presented information. Additionally, we evaluated the report's structure, grammatical accuracy, and stylistic competence. Finally, we suggested improvements where necessary.

2 Major issues

2.1 Missing topics

Firstly, The report did not have an abstract. It also did not have separate sections on the following concepts of nuclear power safety:

1. Event classification
2. Safety margin, single failure, and acceptance criteria.

Some of these topics were lightly touched when discussing the deterministic safety analysis. But as major concepts of nuclear power safety, these topics should be discussed at length in individual sections.

2.2 Major issue(s) in the title

The course code was not correctly written in the title of the report.

2.3 Major issue(s) in the introduction

Not all the topics discussed in the report were introduced in the introduction. Defense in depth, the Narora fire accident, and the computer codes were adequately talked about in the introduction. However, safety assessment was barely touched and deterministic and probabilistic safety anayles were not mentioned in the introduction at all.

2.4 Major issue(s) in discussing defense in depth

ALARA principle was not discussed. Additionally, the fact that defense in depth also includes ensuring safety during normal operation was not mentioned. The discussion was solely focused on defense in depth in accident scenarios.

3 Minor issues

3.1 Minor issue(s) in the title

The title is entirely focused on the accident event. It does not clearly communicate to the reader that discussion on different concepts of nuclear power safety was also a major part of the report.

3.2 Minor issue(s) in discussing safety assessment

The overview of the safety assessment process is not exactly comprehensive. There was no discussion on the features to be assessed and how safety margins are defined. Additionally, the stated objectives of safety assessment varied significantly from those discussed in the course lectures.

3.3 Minor issue(s) in the structural layout of the contents

In the contents, the "probabilistic safety analysis" section was written as a subsection of the "deterministic safety analysis" section. The "introduction" later became the section header for the "probabilistic safety analysis" section.

3.4 Minor issue(s) in table label

Figure 6 depicted a table but was labeled as a figure. It was also placed in portrait orientation without any real necessity.

4 Other observations

The report has some grammatical errors and spelling mistakes that need correction. The application of passive voice should be reduced to make the report more readable. Additionally, the report's negative tone should be changed to a more constructive tone, and a reduction of long phrases is suggested to increase the ease of comprehension.

5 Conclusion

In conclusion, the report has several major and minor issues that should be addressed. The abstract should be added, and the report should also include the missing safety concepts, such as event classification, safety margin, single failure, and acceptance criteria. The ALARA concept and safety during normal operations should be discussed in the defense in depth section. The report should also include a more comprehensive overview of safety assessments, including their goals and the definition of safety margins. Lastly, the title, contents, and labels should be corrected as necessary.