ChEn 475 Critiquing Assignment

Instructions
The purpose of this assignment is to strengthen your ability to identify good technical writing with the hope that your own technical writing will be improved. You will read through a proposed research article and analyze it against the criteria we use in class to grade your reports. The specific article is “Numerical Analysis of Isotope Production in Molten Salt Reactors: A Case Study for Molybdenum-99 Production” by M. Stoddard et al., Annals of Nuclear Energy, 2018.

This assignment is worth 20 points. You will begin by first reading the article. Don’t rush because it takes time to understand technical communications. Once you have read the article, answer the questions below.

Questions about the Introduction
1. A good introduction should indicate why the research is important (the background). (For UO lab reports, this information is found in the problem-statement memo.) Below, briefly explain the reasons the authors gave for why the research is important. Also indicate how effective you think this section of the report is.
2. The introduction should also clearly state the objectives of the research. What were the objectives and how effective were the authors at stating theses?
3. The introduction of a paper should also have some transition which leads the reader smoothly into the next section. How did the author transition from the introduction section into the Experimental section, and how effective was the transition?
4. Please grade the Introduction using the following rubric. Give brief reasons why you docked any points.

| Clear objective in introduction | /5 |

Questions about the “Methods” Section
The measure of a good experimental methods section is that the reader could replicate the experiment from the information given.

1. What headings and subheadings, given in the paper, correspond to what our class calls “Methods?”
2. Evaluate the experimental figures. Were enough details given? Was the figure clear? Is there anything you would like to have seen?
3. Give five specific examples of the where the author was precise in his description of the methods.
4. How well does the author describe the experimental/simulation runs performed (i.e. run 1 was at $T = #, P = #$, run 2 was at $T = #, P = #$, …)?
5. What are the researchers actually evaluating with their simulations? Please grade the Methods Section using the following rubric. Give brief reasons why you docked any points.
Questions about the “Theory/Analytical” Section
The measure of a good theoretical section is that the reader could perform a calculation using the raw data and get the results found in the paper.

1. What headings and subheadings, given in the paper, correspond to what our class calls “Theory/Analytical?”
2. What do you think about the validity of the assumptions (implied or stated) given by the authors?
3. Are there any way you think the authors could be clearer about their equations?
4. Describe how the figures help to convey the analytical reasoning that the paper is trying to convey. Is there sufficient information in these figures to make the conclusions that the authors have indicated?
5. Please grade the Theory/Analytical Section using the following rubric. Give brief reasons why you docked any points.

Questions about the Results
Results and Discussions sections can either be separate or combined. However, if they are combined, both “results” and “discussion” elements are present. The measure of a good results section (or the “results” elements in a combined Results/Discussion section) is that the reader understands the data that were obtained, if they make sense, and why the reader is showing that particular data (how does it fit in with his objective).

1. Consider the various plots and tables in the paper.
   a. Do each of these figures and tables need to be included in the paper, or are any redundant?
   b. Is there sufficient discussion about each figure and table?
2. Would you have presented the data in a different way? Explain why or why not.
3. Would you have changed anything on the figures? Explain.
4. Do the authors present any bad data? Do the presence of bad data, or lack of, affect how you trust the results?
5. Is there anything you would have liked to see in the Results section but did not? Is there anything that was confusing? Do you trust the results? Please explain in each case.

Questions about the Discussion
The measure of a good discussion section (or the “discussion” elements of a combined Results/Discussion section) is that the reader can determine how the data were interpreted and how this interpretation led to any conclusions/recommendations.

1. In this paper, there is no section labeled “Discussion.” As mention above, often the discussion is placed in the “Results” section as it is easy to discuss the results as they are presented. Other times, the discussion section includes advanced analysis of the results, comparisons to previous
work, or an application of the results to some design problem. What headings and subheadings, given in the paper, correspond to what our class calls “Discussion?”

2. Based upon Figure 5, the author makes some statements about how viscosity is affected by temperature and benzene concentration. Do you agree with the author? Why or why not?

3. Ultimately, all data reported in paper should be linked to the recommendations through the “discussion.” Please pick three figures or tables and explain how a discussion of the results leads to recommendations/conclusions.

4. Please grade the Results and Discussion Section using the following rubric. Give brief reasons why you docked any points.

| Results and Discussion with appropriate analysis, accurate results, clear logic, and persuasive arguments. | /30 |
| Appropriate figure(s), graph(s), tables(s) to adequately support results and conclusions |

**Questions about the Recommendations/Conclusions**

The measure of a good Recommendations/Conclusions section is that the reader can quickly determine what you are recommending/concluding and how sure you are of that recommendation/conclusion.

1. What is recommendation/conclusion of the author?
2. What makes the Conclusion/Recommendation section clear/unclear, effective/ineffective?
3. What makes writing a conclusion/recommendation section difficult for this experiment?
4. Please grade the Conclusion/Recommendation Section using the following rubric. Give brief reasons why you docked any points.

| Clear conclusions and recommendations supported by the data | /10 |

**Other Questions**

1. Comment on anything else you liked/disliked about the paper. (Provide at least 1 like and 1 dislike and a brief reason for each.)

**Application**

As you read and analyzed the article, you should have had some ideas on how you can improve your own writing. You probably also realized that portions of your report were written well.

1. Thinking about your report, what could you have done to improve it? Please list at least three things, explaining how your report was lacking and what portion of the research article helped you see the problem.
2. What did you do well on your first report? List at least three things, explaining why that section was good and what portion of the research article helped you see this.