Review of the Project Group:
Group Code: 32
Full title: ESBWR NUCLEAR REACTOR CHARACTERISTICS

Intended learning outcome (ILO)	Grade (0-3)	Explanation for the grading of the evidences of achieving respective ILO. Suggestions for improvements and other comments
1. *Collect information on* General design specification of the nuclear power plant with selected reactor type (Task 1, ILO1, ILO2)	2	The first part describing the core and the reactor vessel are very good, concise and precise, but it is a shame that you haven't finished it. It also would have been nice to add a general overview of the entire power plant, so that we can see which auxiliary systems have been withdrawn of this design because it is a natural circulation one.
2. *Describe* Operational principles of the power plant. (Task 2, ILO1, ILO2)	1	The startup procedure is very clear. For the real report, you should add the shutdown procedure which is also important.
3. *Explain* Safety features of the power plant. (Task 3, ILO1, ILO2)	1	You could have also talked about the Isolation Condenser System and the Standby Liquid Control System, proper to the ESBWR technology. In the small introduction of the part three, you also mention three groups for safety features, but you only cite features for the two first groups. It would be nice to have some examples of the features used for the last group. Effectively, it is necessary to talk about the BiMAC for the ESBWR. Nevertheless, what you wrote about the over safety features is very good.
4. *Calculate* Selected core parameters (Task 4, ILO3)	2	Error of number in the figure: linear power is not figure 2 as mentioned in the text but 9. Since you have full length rods and part length rods, it seems that the only pressure drop due to this change is calculated with the pressure loss coefficient due to area change. But in the upper part of the reactor, the hydraulic diameter and the flow area are not equal to the ones at the inlet. The mass flow rate also changes in this area. It does not seem that you have considered this change since you haven't explained it. If you made the assumption that it does not have a significant effect on your calculations, you should explain it. The rest is great, again very clear and concise.
5. *Calculate* CHF margins in a hot channel (Task 5, ILO4a)	3	Good idea to plot the average channel with the hot channel for temperature, void and enthalpy !
6. *Calcaulte* Maximum cladding and fuel pellet temperature (Task 6, ILO4b)	1	Explain how you find the value for helium thermal conductivity. Shouldn't this parameter also depend on temperature ? Which category of heat transfer did you consider to find this value ? Which temperature do you use for the heat transfer calculation based on the Chen and Diltus-Boelter correlations ? Do you use the coolant temperature, or Tco ? Be more clear about this. Why didn't you realize an iterative process to find the adequate

		temperature that you have to use in the different correlation, instead of using the already estimated Tco value ? How do you find Tco anyway without an iterative process to estimate it ? Is it the maximum value provided by the regulation ? The sharp jump in the cladding temperature is due to the change between single and two phase flow correlation for the coolant heat transfer coefficient. You should plot the heat transfer distribution over the channel. Maybe you should try to smooth the cladding temperature so that the curve is less sharp.