Review Form 3

Journal Name:	**Asian Journal of Geological Research**
Manuscript Number:	**Ms_AJOGER_121694**
Title of the Manuscript:	**Log1DNet: A Deep Learning Architecture for Sonic Log Prediction for Seal Rock Identification in Carbon Capture and Storage Projects**
Type of the Article	

Review Form 3

PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.		
Is the title of the article suitable? (If not please suggest an alternative title)		
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.		
Are subsections and structure of the manuscript appropriate?		
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.		
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.		

Review Form 3

Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	**Dear author,** **Your manuscript looks good. But as a reviewer, I have some suggestions.** **Data Dependency and Generalization:** While the Log1DNet model demonstrates high accuracy with data from the Volve field, its dependency on specific datasets raises concerns about its generalizability. The model's effectiveness in different geological settings or with datasets from other fields remains unproven. This limitation may hinder its broad applicability in diverse CCS projects. **Model Complexity and Resource Requirements:** The use of a deep learning approach, particularly a convolutional neural network, introduces significant complexity and computational resource requirements. The need for substantial computational power may limit the accessibility of this method for smaller organizations or projects with limited resources, posing a barrier to widespread adoption. **Lack of Field Validation:** The study primarily relies on synthetic and historical data for training and validation. There is a noticeable lack of real-world field validation to demonstrate the practical utility and accuracy of the predicted sonic logs in active CCS projects. Without field trials, the true effectiveness and reliability of the model in real-world applications remain uncertain. **Assumption of Data Availability:** The model requires triple-combo logs as input, which may not always be available in older or less documented fields. The assumption that these input logs are readily available could limit the model's practicality, as missing or incomplete data is a common challenge in many geological surveys and older reservoirs.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Pankaj R. Chandre**
Department, University & Country	**Flora Institute of Technology, India**