Review Form 1.7

Journal Name:	**Journal of Engineering Research and Reports**
Manuscript Number:	**Ms_JERR_116762**
Title of the Manuscript:	**Development of Model and Graphical User Interface for Leak Localization in Crude Oil Pipeline**
Type of the Article	

Review Form 1.7

PART 1: **Review Comments**

	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)*
Compulsory REVISION comments **1. Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) **2. Is the title of the article suitable?** (If not please suggest an alternative title) **3. Is the abstract of the article comprehensive?** **4. Are subsections and structure of the manuscript appropriate?** **5. Do you think the manuscript is scientifically correct?** **6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	1. The manuscript addresses a critical issue in pipeline transportation by focusing on the development of efficient leak detection systems. Given the significant risks and consequences associated with pipeline leaks, the study's findings are important for the scientific community, as they offer practical solutions to enhance safety and minimize environmental and financial impacts. 2. The title "Efficient Leak Detection and Localization in Crude Oil Pipelines: A Mathematical Modeling Approach" effectively summarizes the key focus of the article. It accurately reflects the study's emphasis on improving leak detection and localization methods using mathematical modeling techniques. 3. The abstract provides a comprehensive overview of the study, summarizing the research objectives, methodology, key findings, and implications. It effectively communicates the significance of the research and the contributions made to the field of pipeline transportation. 4. The subsections and structure of the manuscript are appropriate, providing a logical flow of information from introduction to methodology, results, discussion, and conclusion. Each section is well-defined and contributes to the overall coherence of the manuscript. 5. The manuscript appears to be scientifically correct, as it employs established principles of fluid mechanics and mathematical modeling to address the problem of leak detection and localization in crude oil pipelines. The validation of the models using field measurements enhances the credibility of the findings. 6. The references cited in the manuscript appear to be sufficient and relevant to the topic. However, to further enrich the literature review, additional references could be included to explore related research on leak detection technologies, pipeline safety, and advancements in mathematical modeling techniques for fluid flow analysis. Some recent references to consider may include studies published within the past few years that have contributed to the understanding of pipeline integrity management and leak detection methodologies.	
Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	The paper presents a comprehensive study on the development and implementation of a leak detection and localization system for crude oil pipelines. Here's a detailed reviewer assessment: Significance and Relevance: The paper addresses a crucial issue in pipeline transportation, namely the detection and localization of leaks, which pose significant risks to the environment, human safety, and financial investments. The significance of the study lies in its potential to mitigate the impact of leaks by enabling swift detection and precise localization, ultimately reducing the severity of consequences. Methodology: The use of mathematical models based on principles such as conservation of mass and modified	

	Darcy-Weisbach equations is appropriate for the study's objectives. The incorporation of actual field measurements for validation enhances the credibility of the models developed. Implementation and Testing: The utilization of Matlab software for model simulation is suitable, considering its versatility and widespread use in engineering applications. Testing the model with four field cases demonstrates its practical applicability and robustness under different scenarios. Results and Validation: The paper reports swift leak detection, accurate localization, and determination of pressure at the leak point, which are essential metrics for evaluating the effectiveness of the proposed system. Validation using experimentally determined results adds credibility to the study's findings, indicating a high level of accuracy with minimal error. Clarity and Presentation: The paper is well-structured, with clear explanations of the methodology, equations, and results. However, some sections could benefit from additional clarification or elaboration, particularly regarding the implementation details and assumptions made in the modeling process. Conclusion: Overall, the paper makes a significant contribution to the field of pipeline transportation by offering a systematic approach to leak detection and localization. Further research could focus on real-time implementation and integration of the proposed system into existing pipeline infrastructure, as well as exploring additional factors that may influence leak detection accuracy, such as environmental conditions and pipeline materials. Recommendation: Based on the strengths identified in the study, I recommend acceptance for publication, with minor revisions to address any clarity or completeness issues identified during the review process. Additional Comments: The paper could benefit from discussing potential limitations or constraints associated with the proposed methodology and acknowledging any assumptions made during model development. Including a comparison with existing leak detection technologies or methodologies would provide context and highlight the novelty or superiority of the proposed approach. • add new references: Farhaoui, Y.and All, Big Data Mining and Analytics, 2023, 6(3), pp. I–II, DOI: 10.26599/BDMA.2022.9020045 Farhaoui, Y., “Intrusion prevention system inspired immune systems” Indonesian Journal of	

	Electrical Engineering and Computer Science, vol. 2(1), pp. 168–179, 2016.	

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:

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