

Review

of the dissertation work of Yertay Talgatovich Eskaliev entitled
 “Methodology for prospecting gold-bearing deposits using modern satellite technologies, case study of the West Kalba gold belt”
 submitted for the degree of Doctor of Philosophy (PhD) in the educational program
 8D07201 “Geology and Exploration of Mineral Deposits”

№	Criteria	Meeting the criteria (underline one of the answer options)	Justification of the official reviewer's position (comments should be highlighted in italics)
1.	The topic of the dissertation (as of the date of its approval) corresponds to the directions of scientific development and / or state programs	1.1 Correspondence to the priority directions of scientific development or state programs:	
		<p><u>1) the dissertation was completed within the framework of a project or target program funded from the state budget (specify the name and number of the project or program);</u></p> <p>2) the dissertation was completed within the framework of another state program (specify the program name);</p> <p>3) the dissertation corresponds to the priority direction of scientific development approved by the Higher Scientific and Technical Commission under the Government Republic of Kazakhstan (specify the direction).</p>	<p>The dissertation was carried out within the framework of state-funded scientific projects IRN BR24992854 and IRN AP25795761 and corresponds to the priority directions of scientific development of the Republic of Kazakhstan related to mineral resource development, digitalization of geological exploration, and sustainable subsoil use.</p>

2.	Importance for science	<p><u>The work makes a significant contribution to science, and its importance is well disclosed/not disclosed.</u></p>	The work makes a significant contribution to science. The importance of the research is sufficiently disclosed through the development of a systematic and reproducible remote sensing methodology for gold exploration
3.	The principle of independence	<p>The level of independence: 1) high; 2) medium; 3) low; 4) no independence.</p>	The candidate demonstrates a high degree of independence in data analysis, methodological development, and interpretation of results.
4.	The principle of internal unity	<p>4.1 Justification of the relevance of the dissertation: 1) justified; 2) partially justified; 3) not justified.</p>	
		<p>4.2 The content of the dissertation reflects the topic of the dissertation: 1) reflects; 2) partially reflects; 3) does not reflect.</p>	
		<p>4.3. The purpose and objectives correspond to the topic of the dissertation: 1) match; 2) partially match; 3) do not match.</p>	

		<p>4.4 All sections and provisions of the dissertation are logically interrelated:</p> <ol style="list-style-type: none"> 1) completely interrelated; 2) partial relationship; 3) no relationship. 	
		<p>4.5 The new solutions (principles, methods) proposed by the author are reasoned and evaluated in comparison with the known solutions:</p> <ol style="list-style-type: none"> 1) there is a critical analysis; 2) the analysis is partial; 3) the analysis is not your own opinions, but quotes from other authors; 	
5.	The principle of scientific novelty	<p>5.1 Are the scientific results and provisions new?</p> <ol style="list-style-type: none"> 1) completely novel; 2) partially novel (25-75% are novel); 3) not new (less than 25% are new). 	
		<p>5.2 Are the conclusions of the dissertation new?</p> <ol style="list-style-type: none"> 1) completely new; 2) partially new (25-75% are new); 3) not novel (less than 25% are novel). 	
		<p>5.3 Technical, technological, economic or managerial decisions are new and justified:</p> <ol style="list-style-type: none"> 1) completely novel; 2) partially novel (25-75% are novel); 3) not novel (less than 25% are novel). 	
6.	Validity of main conclusions	All main conclusions are based on scientifically sound evidence.	All main conclusions are based on scientifically sound evidence and are sufficiently substantiated.

7.	Main provisions submitted for defense	<p>It is necessary to answer the following questions for each provision separately:</p> <p>7.1 Is the claim proven?</p> <ol style="list-style-type: none"> 1) proved; 2) rather proved; 3) rather not proven; 4) not proven; <p>7.2 Is it trivial?</p> <ol style="list-style-type: none"> 1) yes; 2) no; 3) in the current wording, it is impossible to verify the triviality of the provision. <p>7.3 Is it novel?</p> <ol style="list-style-type: none"> 1) yes; 2) no; <p>7.4 Level to apply:</p> <ol style="list-style-type: none"> 1) narrow; 2) medium; 3) wide; 4) in the current wording, it is not possible to verify the level of application of the provision. <p>7.5 Is it proven in the article?</p> <ol style="list-style-type: none"> 1) yes; 2) no. 	<p>All provisions are proved, non-trivial, novel, and have a wide level of application. The results are reflected in the applicant's scientific publications.</p>
		<p>8.1 The choice of methodology is justified or the methodology is described in sufficient detail:</p> <ol style="list-style-type: none"> 1) yes; 2) no. 	<p>The methodology is justified, modern research methods are used, results are validated, and conclusions are supported by reliable scientific literature</p>
		<p>8.2 The results of the dissertation work were obtained using modern methods of scientific research and methods of data processing and interpretation using computer technologies:</p> <ol style="list-style-type: none"> 1) yes; 2) no. 	

8.	The principle of reliability. Reliability of sources and information provided	8.3 Theoretical conclusions, models, identified relationships and patterns are proved and confirmed by experimental research (for areas of training in pedagogical sciences, the results are proved on the basis of a pedagogical experiment): 1) yes; 2) no.	
		8.4 Important statements are supported by references to up-to-date and reliable scientific literature.	
		8.5 The literature sources used are sufficient for a literature review.	
9	The principle of practical value	9.1 The dissertation has theoretical significance: 1) yes; 2) no.	
		9.2 The dissertation is of practical importance and there is a high probability of applying the results obtained in practice: 1) yes; 2) no.	
		9.3 Suggestions for practice are new: 1) completely novel; 2) partially novel (25-75% are novel); 3) not novel (less than 25% are novel).	
10.	Quality of writing and writing	Quality of academic writing: 1) high; 2) medium; 3) below average; 4) low.	

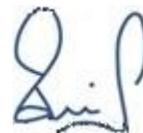
11.	Comments to the dissertation	The dissertation is prepared at a high scientific level. As minor remarks, it is recommended: 1) to further standardize terminology in several sections related to alteration mineral classification; 2) to slightly expand the discussion on limitations of ASTER data in areas with dense surface cover; to improve clarity of selected figure captions for enhanced readability.
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The dissertation complies with the requirements of the Committee for Control in the Field of Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan.

The work is recommended for defense, and the author deserves the award of the degree of Doctor of Philosophy (PhD) in the educational program 8D07201 – Geology and Exploration of Mineral Deposits

Reviewer:

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