



№ 678
Алматы қаласы

№ _____
город Алматы

Approval of the Local Ethical Committee

1.	Doctoral student's full name	Yelnar Yerdesh
2.	Doctoral program (specialty)	8D05403 – Mechanics
3.	Period of study	2020-2023
4.	Dissertation title and date of approval	Thermodynamic optimization of ground source heat pump systems with four thermal reservoirs, No. 5369-b/a dated 17.10.2025
5.	Scientific supervisors – full name, academic position, institution, academic degree, and citizenship	Yerzhan Belyayev, PhD, Research Professor, Al-Farabi Kazakh National University, Republic of Kazakhstan Huasheng Wang, PhD, Professor, Queen Mary University of London, United Kingdom
6.	Research Objects	Ground source heat pump systems for space heating under continental climate conditions
7.	Violations during the planning, evaluation, selection, or conduct of research	Not identified
8.	Violations during the dissemination of research results	Not identified
9.	Protection of rights, safety, and well-being of research subjects (if involving living organisms or natural environment)	No living organisms or environmental objects were involved.
10	Approval Number	IRB – A1825
11	Date of Research Approval	06.11.2025

Chair of LEC

G. Ussatayeva

Secretary of LEC

S. Madiyev

