

DEEP UNDERGROUND CHALLENGE

OFFICIAL REVIEW REPORT

Project: THE FORGE OF EARTH

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1. Project Description

According the author, this projects provides an multifunctional underground center in Moscow, housing a power plant, a farm and a hotel, protected from nuclear threat.

Authors propose an underground center in Moscow, below Lyubyanka square, which consist for surface part, and underground part, located at the depth between in 300 and 400 m below the ground in the limestone, provided to be an ideal depth for such facility in Moscow.

Additionally, a power plant according deep underground concept is provided for power, heat and water supply, and separated facility for food production is provided.

The main part of facility is cross like construction of 2x20x80 m dimension, with greenhouse part of facility of half of that size.

2. Evaluation by Criteria

Criterion	Assessment
Relevance to the Deep Underground Concept	The project involves the construction of big underground facility, with Deep Underground Concept type of power plant provided. Still, this concept does not address the fundamental principles of the Deep Underground Concept in details.
Geology	Moscow sits on the Moscow Syncline (large sedimentary depression) in central part of the East European The

bottom of geological cross-section is constituted by the Precambrian crystalline basement. Over crystalline basement is about a 1.5 - 2.5-km-thick sedimentary massif which is represented by Paleozoic, Mesozoic, and Cenozoic sedimentary rocks. Paleozoic sediments consist by Cambrian – Devonian marine limestones, dolomites, clays and Carboniferous limestones, dolomites, sandstones.

Moscow is part of a tectonically stable intraplate region. There are no active mountain-building, volcanism, or strong earthquakes. Surface of Moscow was shaped by four main glaciations which have been executed in Pleistocene era.

Jurassic clays in the Moscow region belong mainly to the Callovian–Oxfordian and Lower–Middle Jurassic formations. Thickness of layers can reach 50–80 m and often act as aquicludes between Quaternary sands/gravels and deeper Cretaceous aquifers. The clay properties are low permeability, high compressibility and high swelling potential.

This material is not ideal for place for facility, constructed according the deep underground concept.

Sustainability

This project does not address this topic.

Benefit to the Community

The proposal envisions a shelter, which can serve a small group of people.

Use of Modern Technologies

This project provides an use of modern construction techniques, but not from sustainable materials.

Feasibility of Construction	The realization of this object is feasible using modern construction techniques, except the power plant facility where there is not enough details to know if there is possible to be constructed.
Quality of the Design	The design contend the detailed geological conditions and detailed, construction elements of the facility.
Quality of the Presentation	The project consists of a poster with comments. . All submitted material clearly communicates the author's ideas and intentions.

3. Conclusions

This project does not fulfill all the requirements of the Deep Underground Challenge competition and therefore cannot be considered for the main awards. Use of underground for war shelters can be a legit way of using underground, , but Deep Underground concept is not meant to be of such use.

However, this concept covers some aspects of Deep Underground Concept.

From this perspective, *The forge of the Earth * is a significant project.

For this reason, the jury grants this project a Special Recognition Award.