


umweltbundesamt^U
ENVIRONMENT AGENCY AUSTRIA

NPP Paks II

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**Federal Ministry
Republic of Austria
Climate Action, Environment
Energy, Mobility,
Innovation and Technology**

**Paleoseismological assessment of the Siting Report
and the Site License with respect to fault capability**

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Paleoseismological assessment of the siting documents focused on the potential of surface displacement by active geological faults. Such displacement may occur during strong earthquakes (“capable faults”).

Hungarian Governmental Decree No. 118 of 2011 (VII.11.) on nuclear safety requirements:

7.3.1.0800. *“The potential occurrence of a permanent surface displacement on the site shall be analysed and evaluated. The examination must be sufficiently detailed to enable a substantive decision to be taken on the question of the possibility of discarding the site by the occurrence of permanent surface displacement.”*

7.3.1.1100. *“If the potential of occurrence of a permanent surface displacement on the site cannot be reliably excluded by scientific evidences, and the displacement may affect the nuclear facility, the site shall be qualified as unsuitable.”*

Can potential occurrences of permanent surface displacements (capable faults) be reliably excluded?

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Examined documents

Geological Site Report

Prepared by a large multi-disciplinary expert group

Site Safety Report

Distilled from the Geological Site Report by MVM Paks II Zrt. and submitted as basis for the site license

Site Permit

Issued by the Hungarian Atomic Energy Authority

All documents published on <https://atlatzo.hu/> (in Hungarian language)

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Surface rupture of the 2010 Darfield Earthquake (New Zealand)



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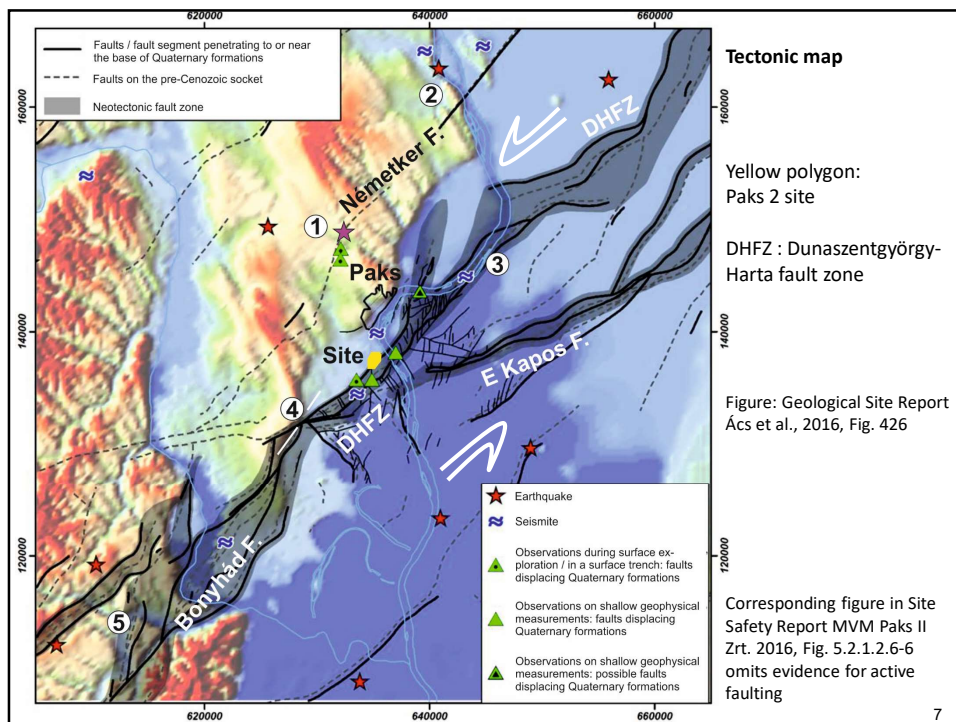
2007 Niigata earthquake (Japan)



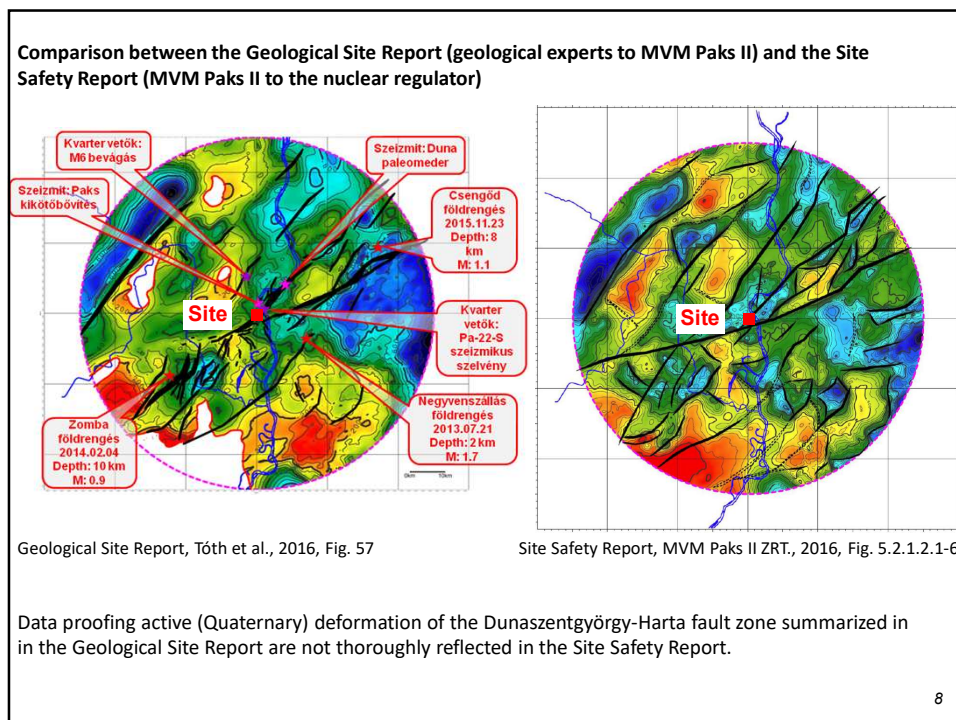
Kashiwazaki Kariwa NPP: fractures on the surface of the site and damaged access road.

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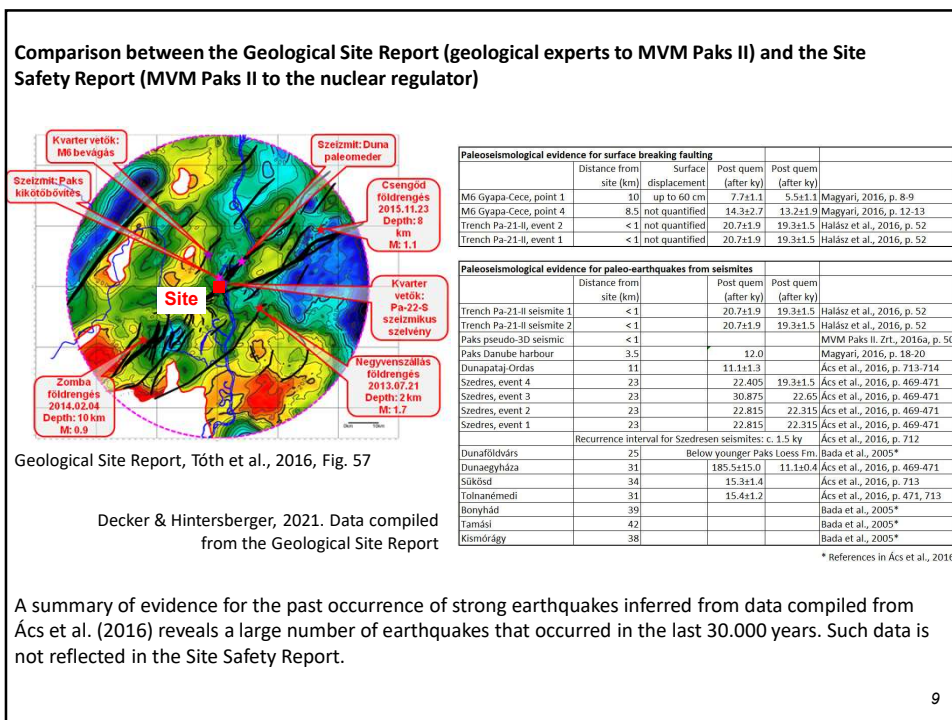
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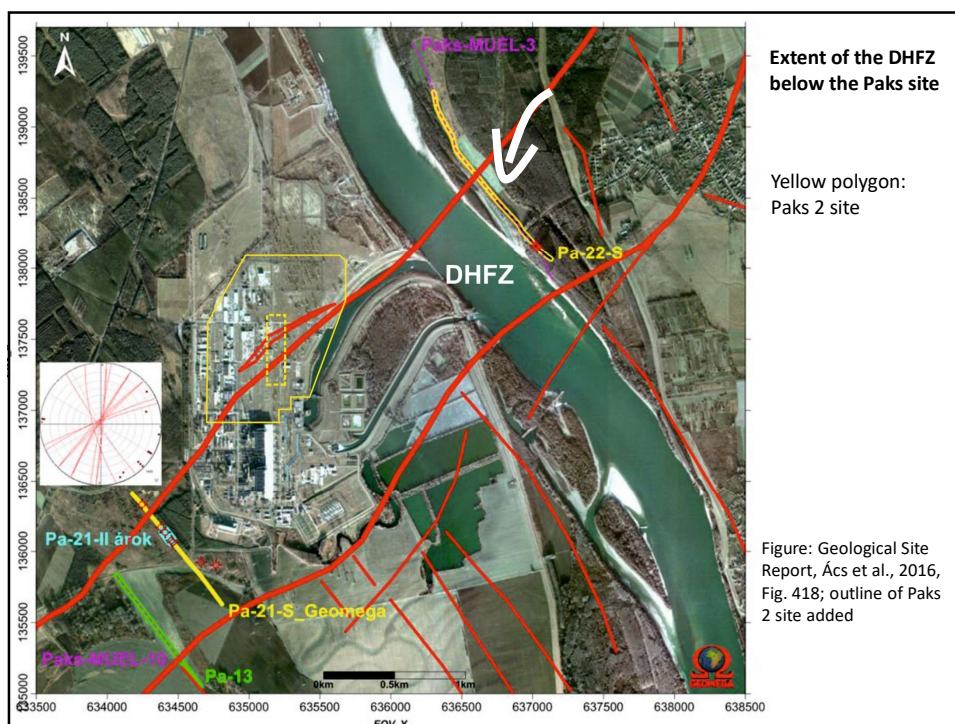
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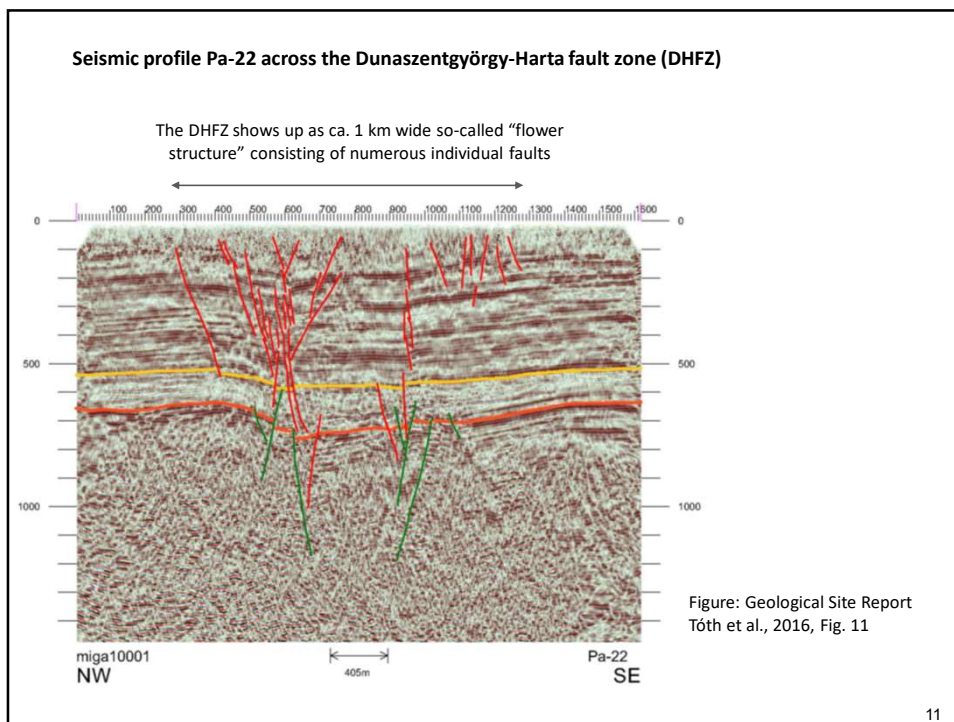
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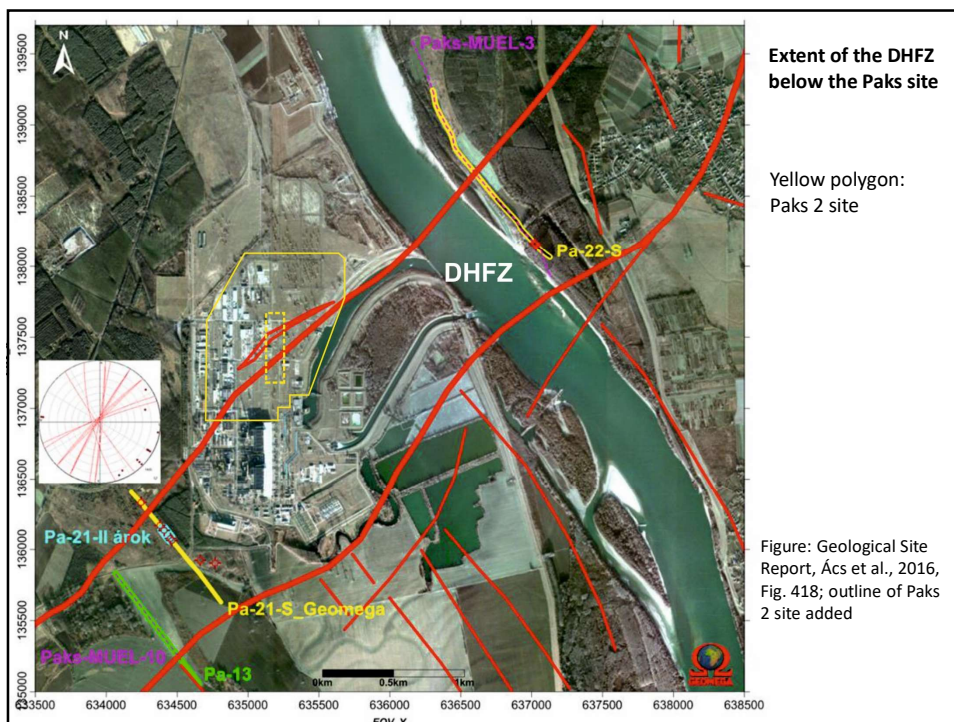
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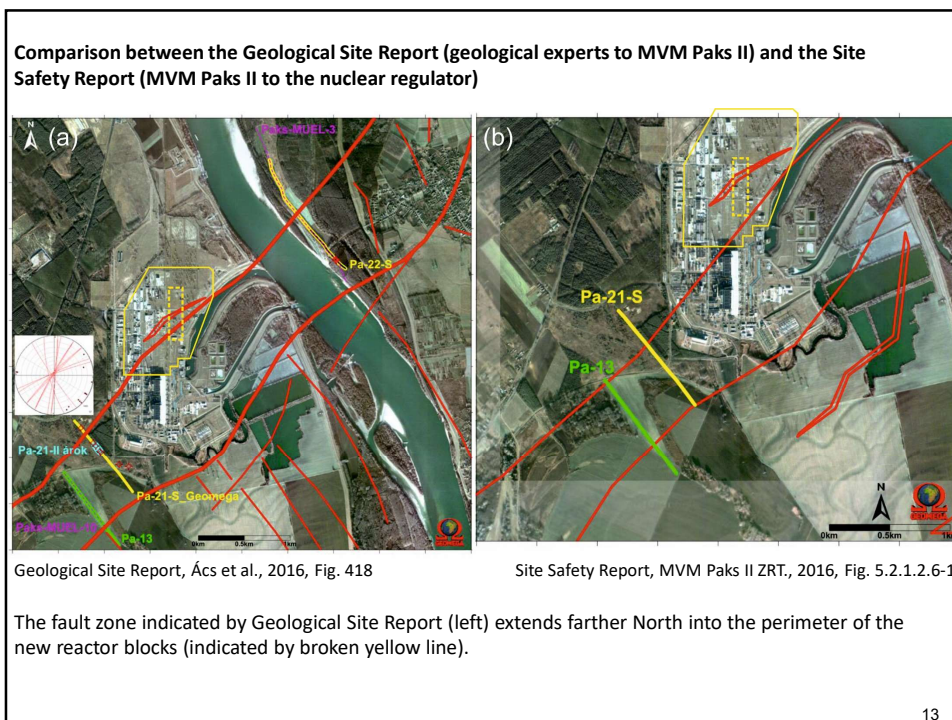
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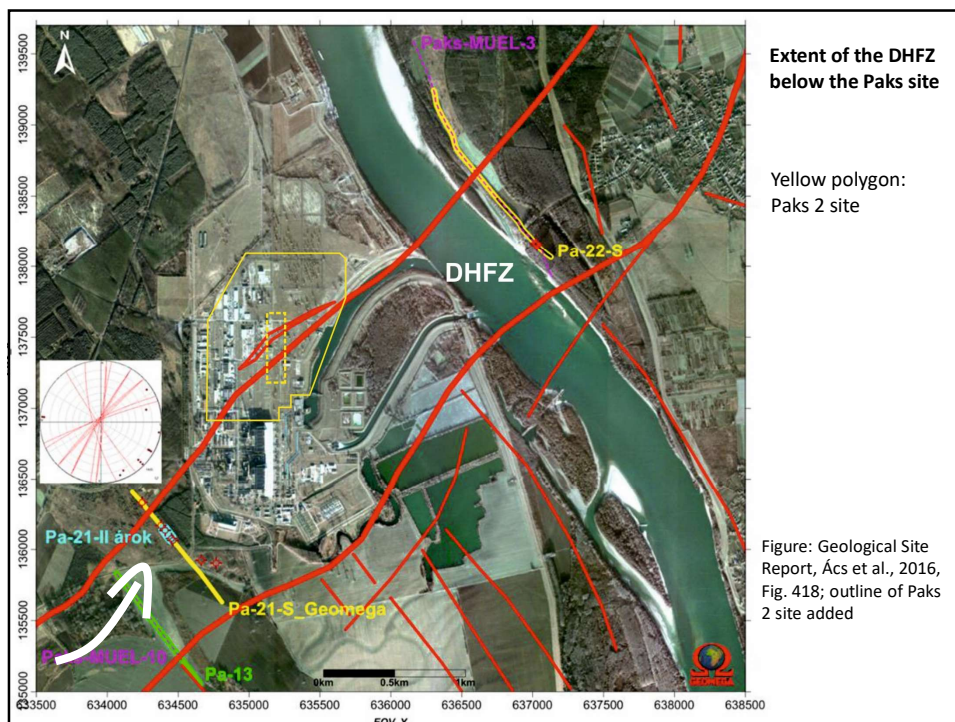
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Seismic profile Pa-21-S across part of the DHFZ (700 m SE of the existing NPP Paks)

The profile shows 10 individual faults (indicated by the red lines) that offset even the youngest sediments of the Danube. These faults are shown to reach up to the surface.

Next slide

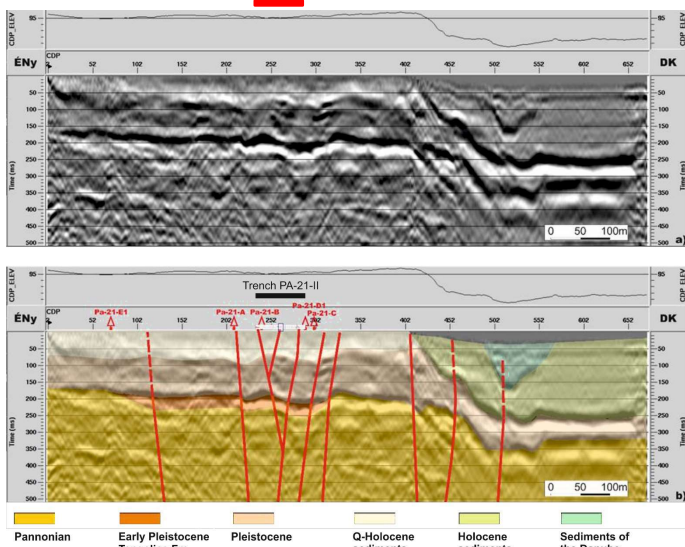


Figure: Geological Site Report, Acs et al., 2016, Fig. 420

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Paleoseismological assessment of a branch fault of the DHFZ in a 82 m long / 2.8 m deep excavation:

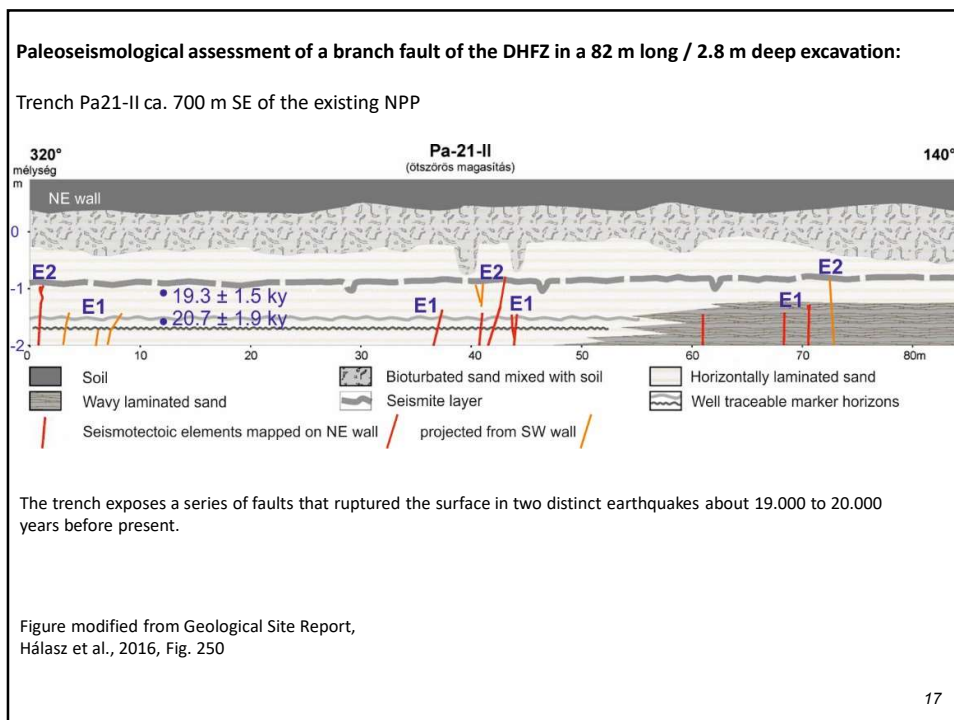
Trench Pa21-II ca. 700 m SE of the existing NPP



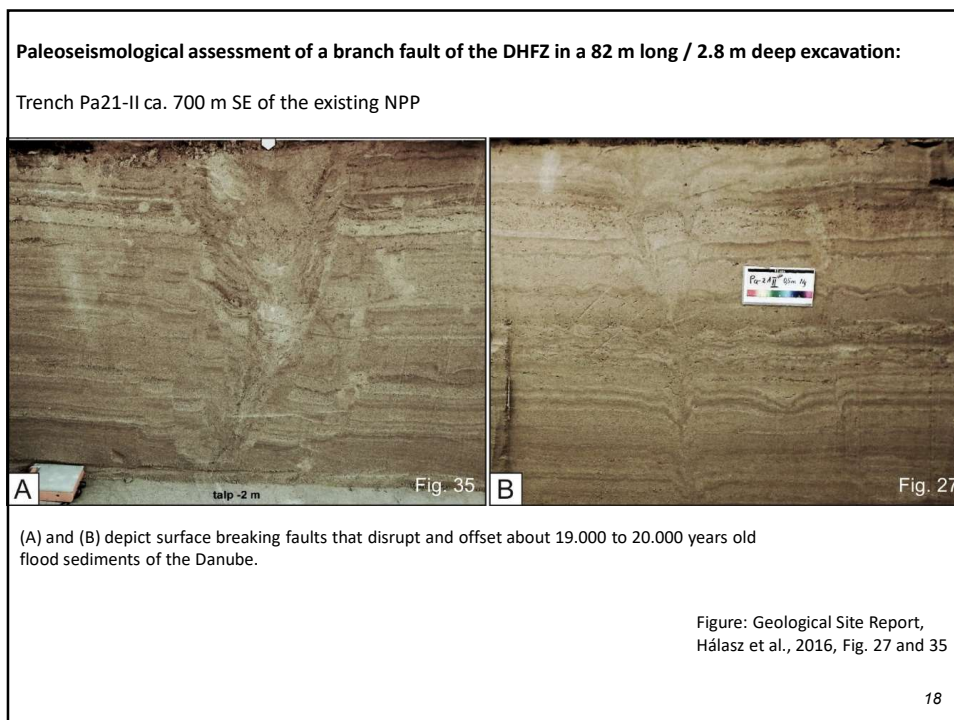
Figure: Geological Site Report, Hálász et al., 2016, Fig. 11 and 12

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Paleoseismological assessment of a branch fault of the DHFZ in a 82 m long / 2.8 m deep excavation:

Trench Pa21-II ca. 700 m SE of the existing NPP

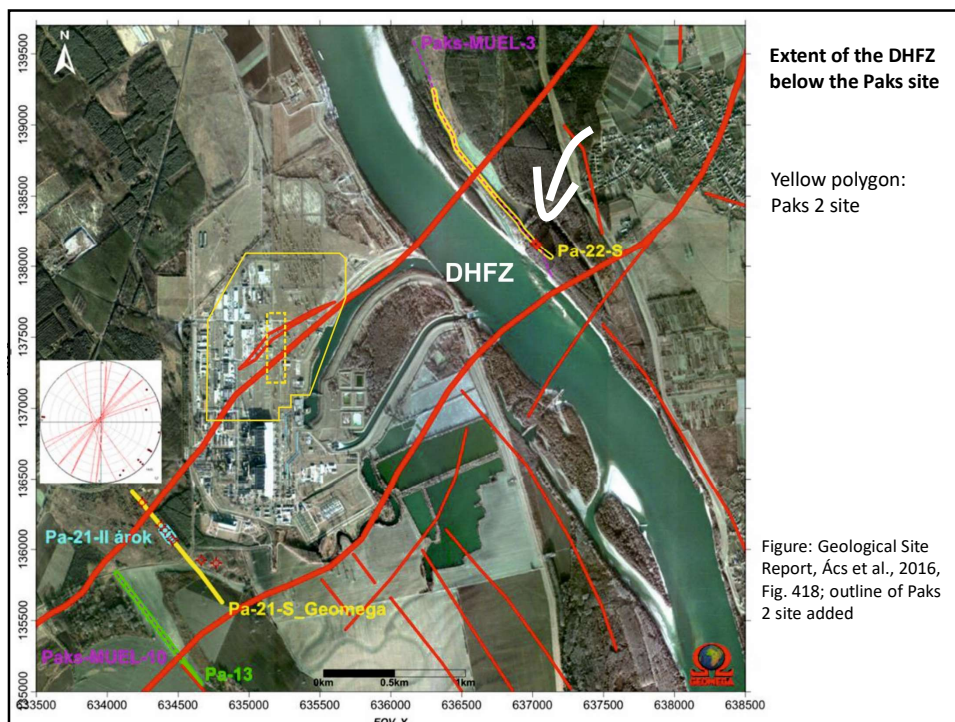



(A) depicts a surface breaking fault that disrupts and offsets about 19.000 to 20.000 years old flood sediments of the Danube.

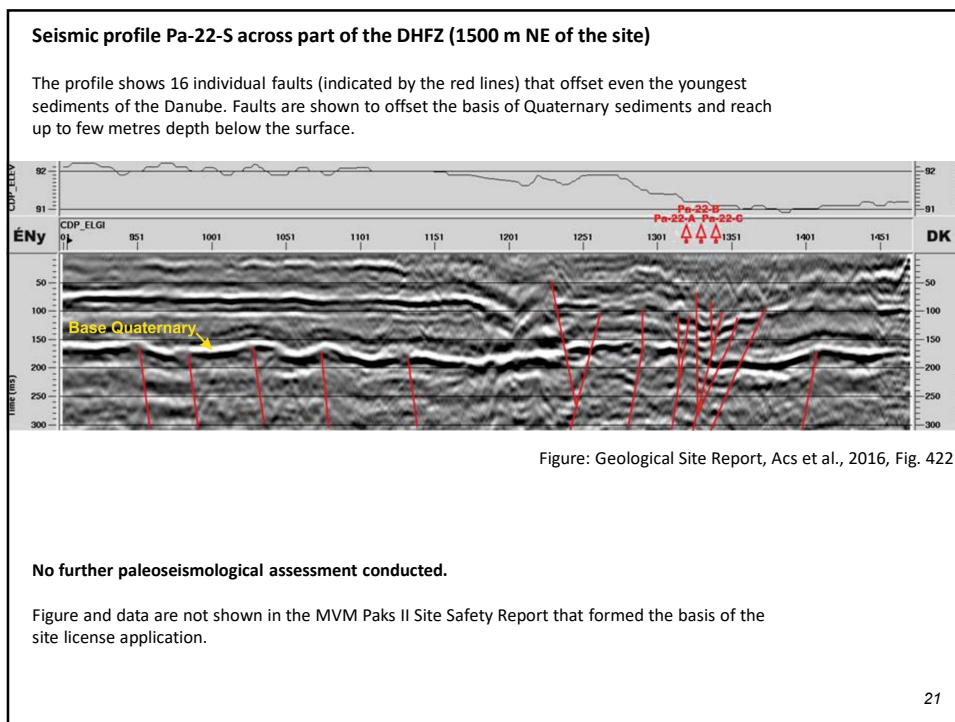
Figure: Geological Site Report, Hálasz et al., 2016, Fig. 27 and 35

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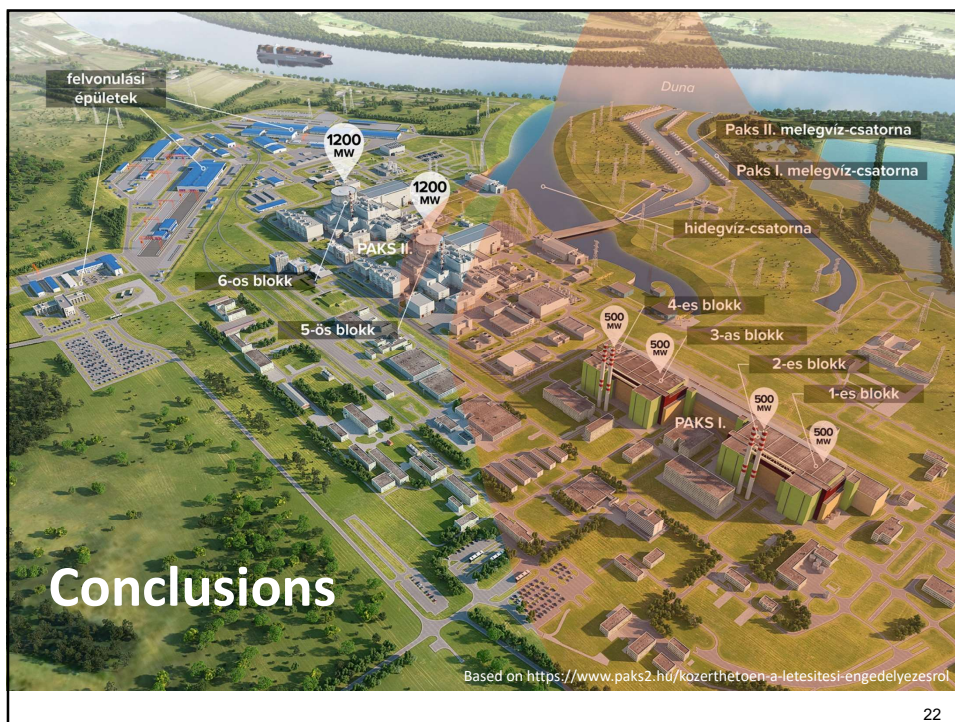
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1.

Paleoseismological data derived from the trench Pa-21-II next to the site confirm the existence of faults leading to permanent ground displacement in the site vicinity of Paks II.

MVM Paks II Zrt. 2016, Site Safety Report:

"Seismic events occurring in the research area ... are not able to significantly displace the surface, i.e., the fault planes cannot be considered capable."

Conclusion:

The statement by MVM Paks II Zrt. is not in line with geological evidence described in the Geological Site Report. The contradictions between the Site Safety Report on the one hand, and the geological observations and the conclusions in the Geological Site Report, on the other hand, is, in opinion of the authors of this study, contrary to the principles of good scientific practice.



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2.

Paleoseismological data derived from the trench Pa-21-II next to the site confirm the existence of faults leading to permanent ground displacement in the site vicinity of Paks II.

Hungarian Governmental Decree No. 118 of 2011 (VII.11.) on nuclear safety requirements:

7.3.1.1100. *"If the potential of occurrence of a permanent surface displacement on the site cannot be reliably excluded by scientific evidences, and the displacement may affect the nuclear facility, the site shall be qualified as unsuitable."*

Conclusion:

Geological and geophysical data documented in the Geological Site Report and the Site Safety Report are not sufficient to reliably exclude the potential of a permanent surface displacement.

The 85 m long paleoseismological trench is regarded insufficient to provide a reliable and comprehensive assessment of the 1 km wide active fault zone that extends in the subsurface of the existing NPP as well as large parts of the Paks II site.



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3.

A wealth of geological and geophysical data described in the Geological Site Report proves that the Dunaszentgyörgy-Harta fault zone is active.

NP-032-01, Federal Codes and Standards in the Area of Atomic Energy Applications, Nuclear Power Plant Siting, Main Criteria and Safety Requirements (Russia):

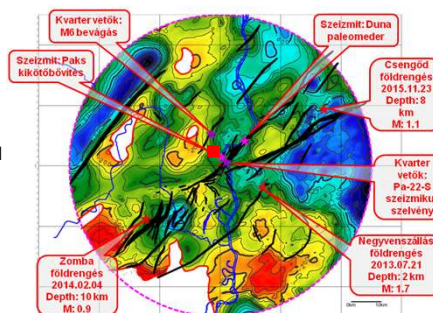
"It is not allowed to locate nuclear power plants:

- *on the sites directly situated on active faults ..."*

Conclusion:

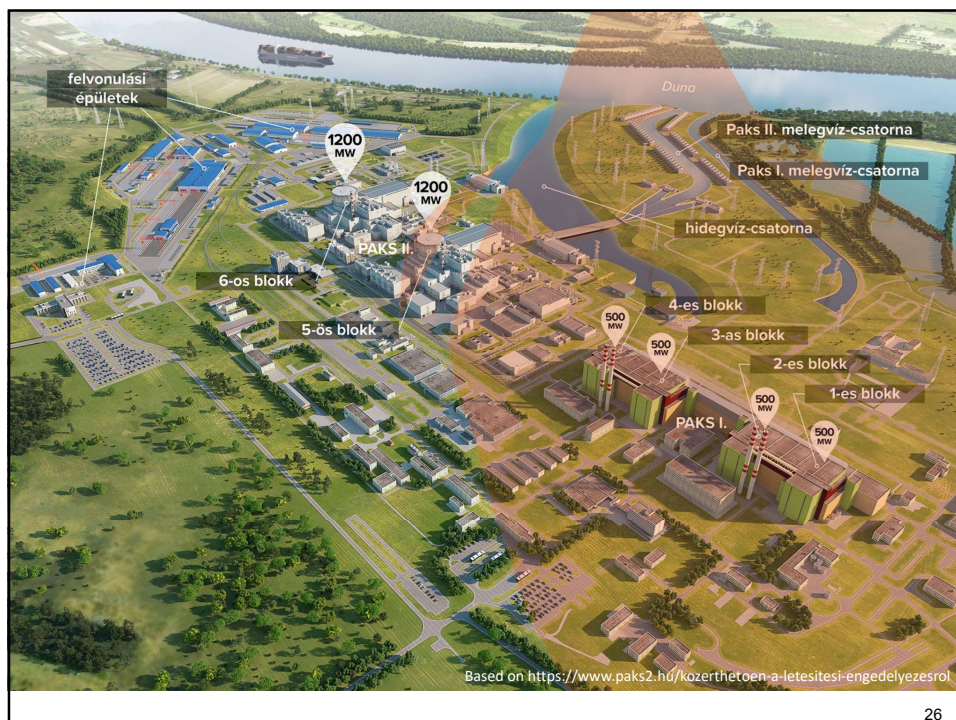
Application of Russian nuclear safety requirements would exclude the construction of an NPP at the Paks II site.

Background: Public information indicates that the nuclear island and the new reactors of Paks II will be supplied by the Russian provider Nizhny Novgorod Engineering Company Atomenergoproekt.



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