

**Subproject No 2:
Excavation of sufficient quantity lorandite-bearing ore
from ore body Crven Dol**

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LOCATION OF ALSAR MINE



Exploitation of the ore locality in ancient time

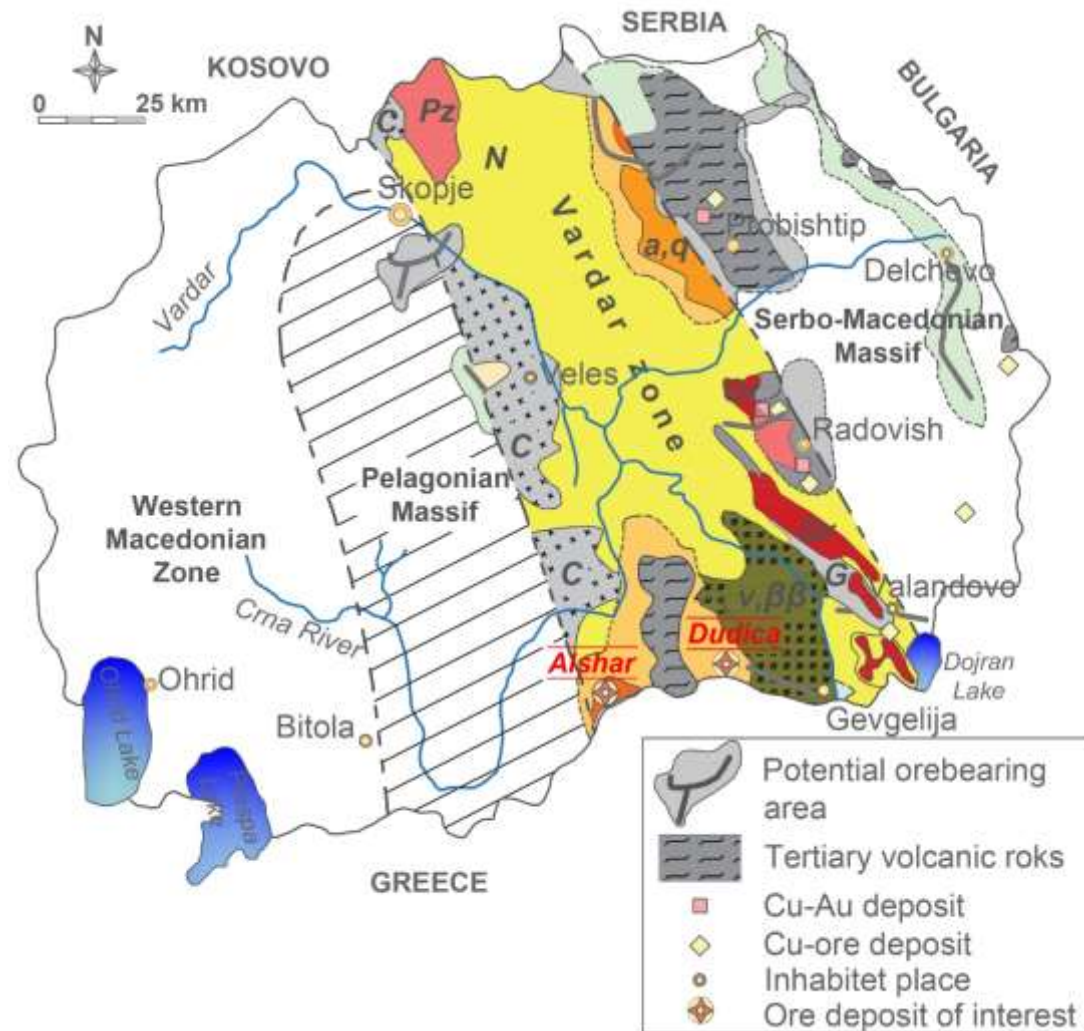
- In the written documents the Allchar mine (Majdan) is mentioned in the Turkish *defters* from 1481 (Knchov, 1900). In this document, it is stated that in the Rožden area (the village of Rožden is near the Allchar mine), from the total annual income of the Turkish Sultan of 13,380 akçes, about 1500 akçes have been collected from the Allchar mine arsenic ore sale [akçe – a Turkish silver coin from the sultan Orhan's time (1326-1359) was in use until the end of the 17th century. Its nominal value and weight were 1/40 talirs (groshs) and 1.07 g, respectively; a talir's weight has been 27.20 g silver]. According to the new population evidence and mentioned annual income in Turkish *defters* from 1519, in this region 175 families are registered, with an annual income of 21,517 akçes, whereas in 1528/29 the number of families was 156 with an income of 21,500 akçes. In this population registration it is also stated that, from the annual production of the mine, there were revenues of 5,400 akçes from sales of pure arsenic and 3,600 akçes from arsenic with lower quality. According to the population registration from 1544/45, the number of families decreased to 113, and annual income amounted to 19,600 akçes. From the production of pure arsenic the income amounted to 5,040 akçes and from the arsenic with lower quality, 4,200 akçes. It should be mentioned that in the *defters* listing the population registration from 1568/69, total income from the production of pure arsenic and arsenic with lower quality was 9,240 akçes.

Exploitation of the ore locality in ancient time

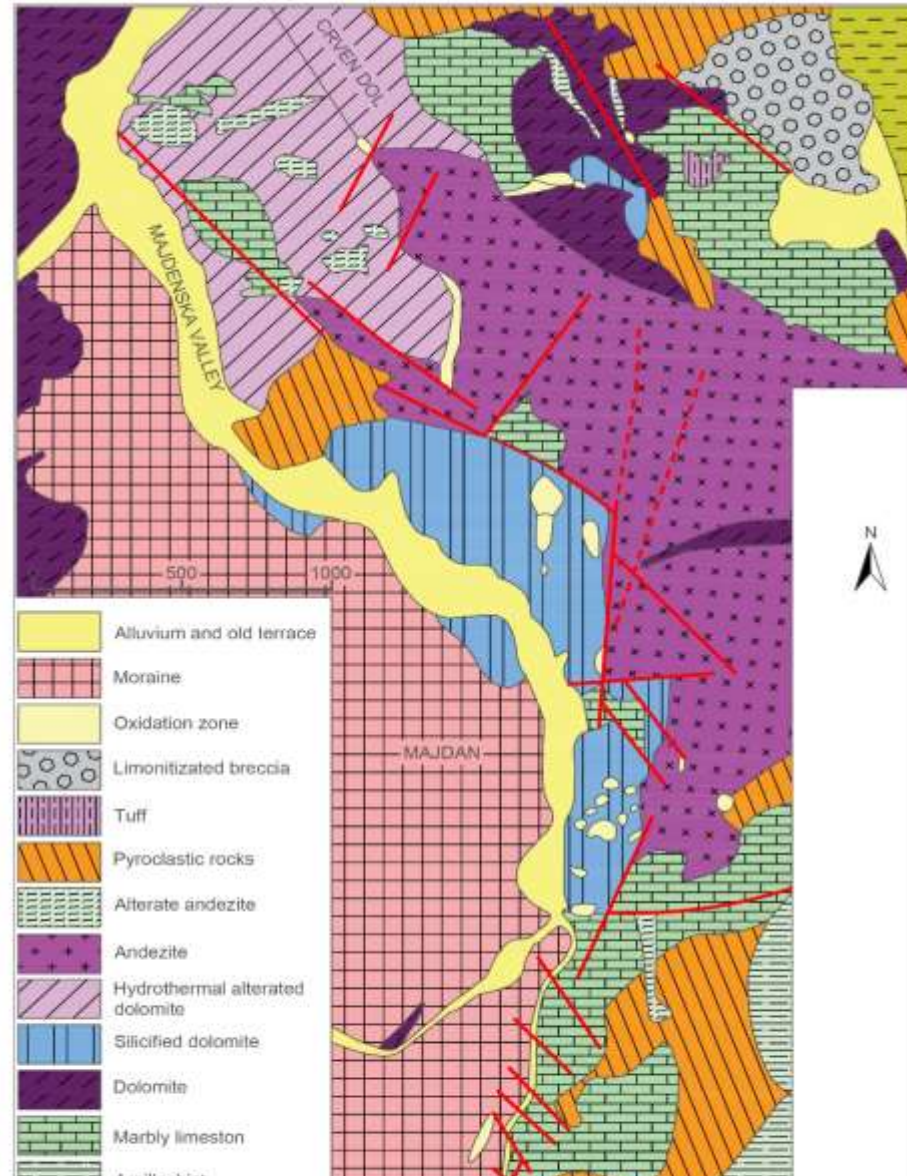
- From the above mentioned data it is clear that the important part of the sultan's income in this part of Mariovo was collected from arsenic production in Allchar mine. It is evident that during the 15th and 16th centuries this region became relatively well developed mainly as a result of Allchar ore production, which accounted for about 35% of the sultan's total income.



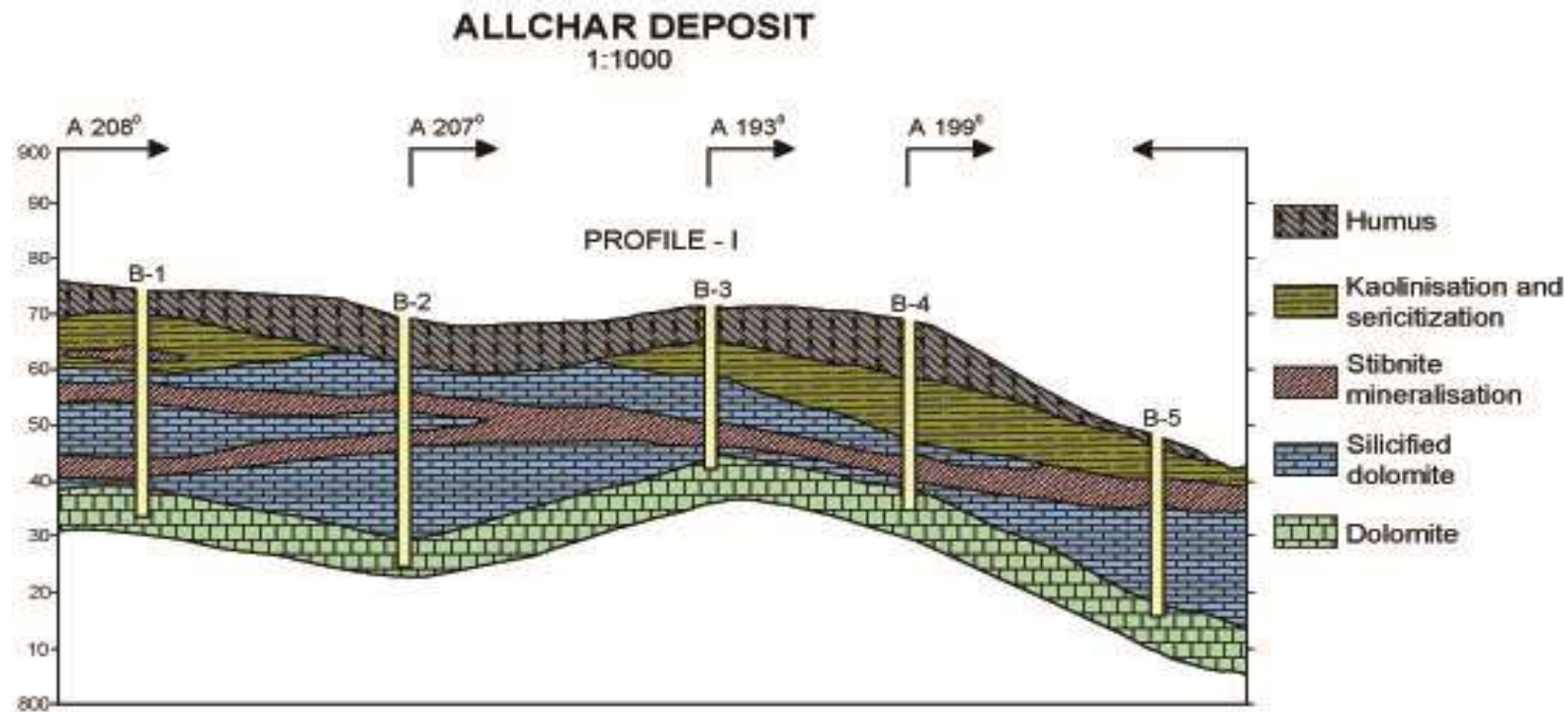
GEOLOGY OF ORE DEPOSIT ALSAR



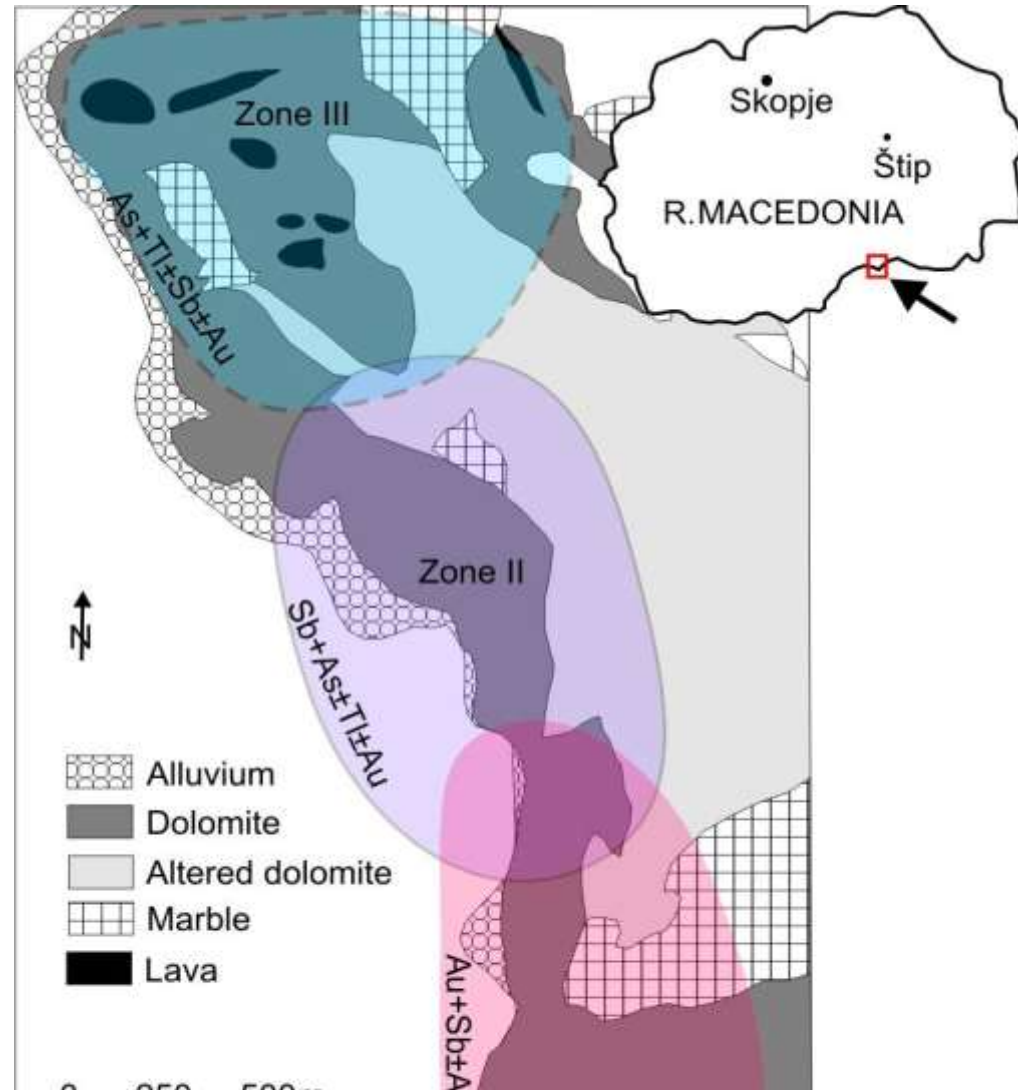
GEOLOGY OF ORE DEPOSIT ALSAR



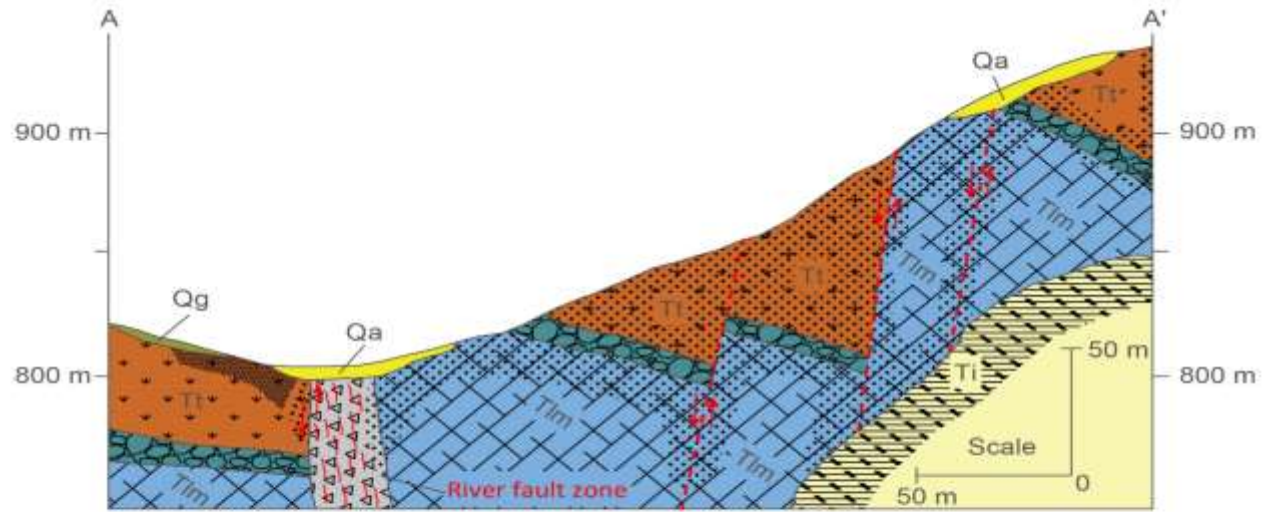
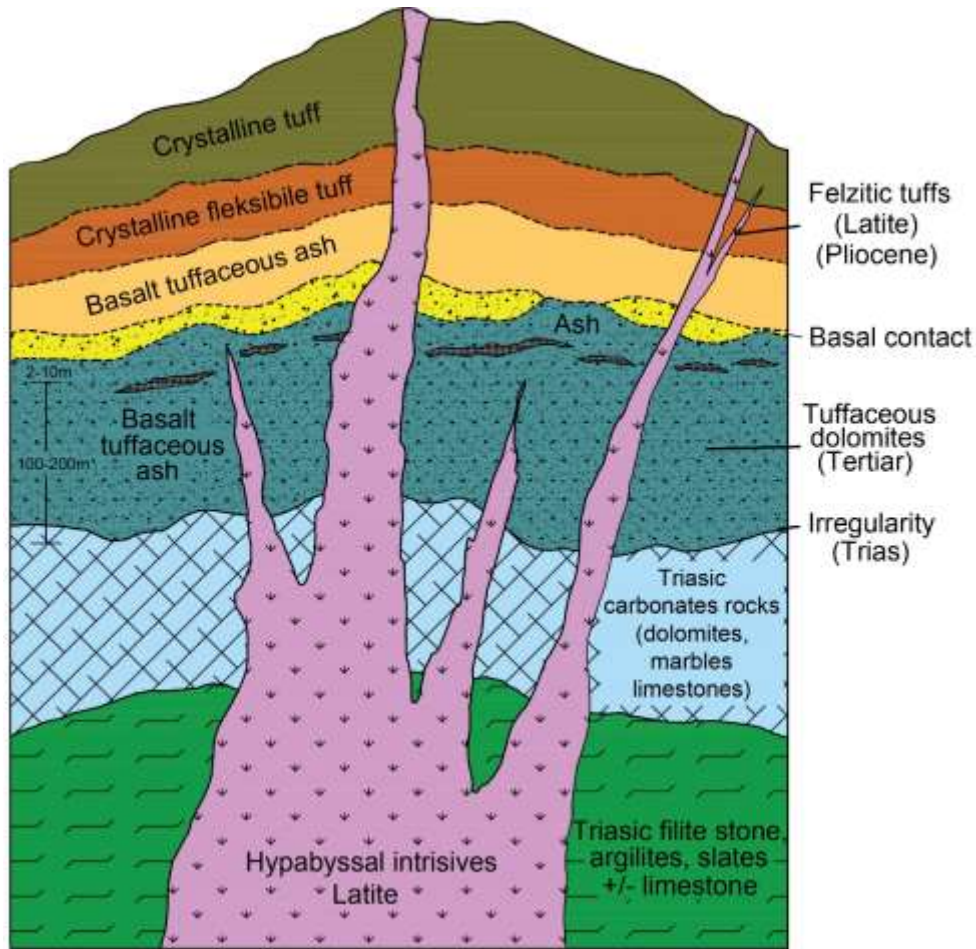
GEOLOGY OF ORE DEPOSIT ALSAR CARLINE TYPE OF MINERALIZATION



GEOLOGY OF ORE DEPOSIT ALSAR ZONE OF MINERALIZATION



MODEL OF MINERALIZATION



Legend

- | | | | |
|----|---|-----|-----------------------------------|
| Qa | Aluvium, (Quaternary) | Tr | Latite tufs (Pliocene) |
| Qg | Fluvioglacial deposits (Quaternary) | TI | Hypoabissal, tuffs, fluvioglacial |
| | Argilitic alterations | | Basalt irregular forms |
| | Silifications | Tim | Marbles and dolomites (Trias) |
| | Faults are marked by tectonic brecciation | | |

AGE OF MINERALIZATION

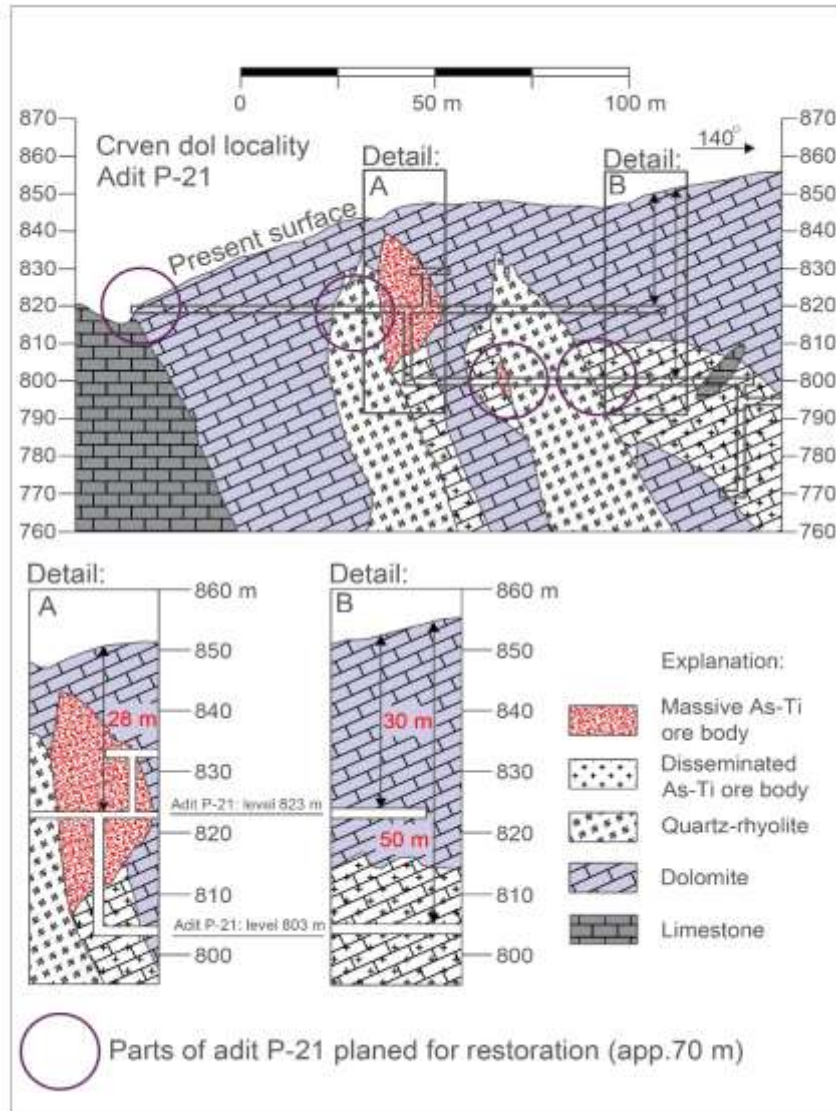
Локација Location	Вид на карпа Rock type	Минерал/основна маса Mineral/groundmass	Број на проби Sample No.	Метод Method	Старост Age [Ma]	Грешка Error ± [Ma]
Црвен Дол Crven Dol	Туф Tuff	Биотит Biotite	1	K/Ar	4.1	0.7
	Туф Tuff	Биотит Biotite	2	K/Ar	4.4	0.4
	Туф Tuff	Фелдспат Feldspar	1	K/Ar	4.6	0.4
	Туф Tuff	Фелдспат Feldspar	2	K/Ar	4.4	0.5
	Андезит Andesite	Биотит Biotite	1	K/Ar	5.1	1.9
	Андезит Andesite	Фелдспат Feldspar	1	K/Ar	4.8	2.0
	Андезит Andesite	Пироксен Pyroxene	1	K/Ar	6.5	4.3
	Андезит Andesite	Основна маса Groundmass	1	K/Ar	3.9	0.2
Црвен Дол Crven Dol	Туф Tuff	Основна маса Groundmass	3	K/Ar	4.5 – 5.0	0.2
Васов Град Vasov Grad	Вулканит Volcanite	Основна маса Groundmass	2	K/Ar	6.5 – 1.8	0.2
Прашник Prašnik	Вулканит Volcanite	Основна маса Groundmass	10	K/Ar	4.5-1.8	0.2
Црвен Дол Crven Dol	Андезит Andesite	Санидин Sanidine	1	Ar/Ar	4.22	0.07
Црвен Дол Crven Dol	Латит Latite	Биотит Biotite	1	K/Ar	5.78	0.12
Којчов Рид Koščov Rid	Субвулкански латит Sub-volcanic latite	Биотит Biotite	1	Ar/Ar	4.6 – 4.8	0.2
		К-фелдспат K-Feldspar	1	Ar/Ar	3.3 – 4.0	0.2
		лобифма Amphibole	1	Ar/Ar	4.8	0.2

MINERALOGY OF ALSAR DEPOSIT

45 minerals was determined
12 talium minerals, 5 endemic (LORANDITE)



CRVEN DOL LOCALITY



CRVEN DOL LOCALITY

we was excavated 15 tons of lorandite bearing ore



ADIT 21 CRVEN DOL



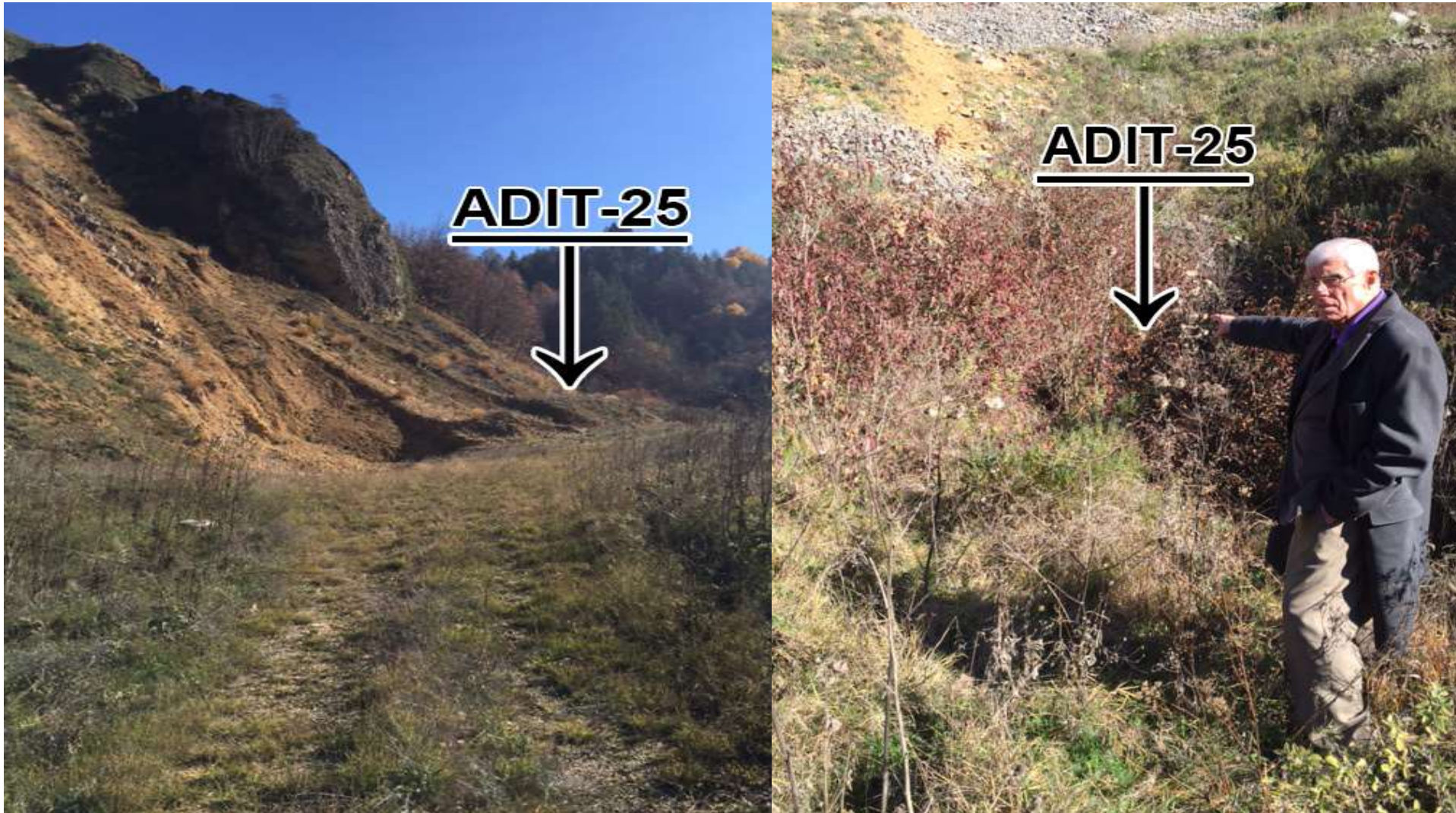
ADIT 21 CRVEN DOL



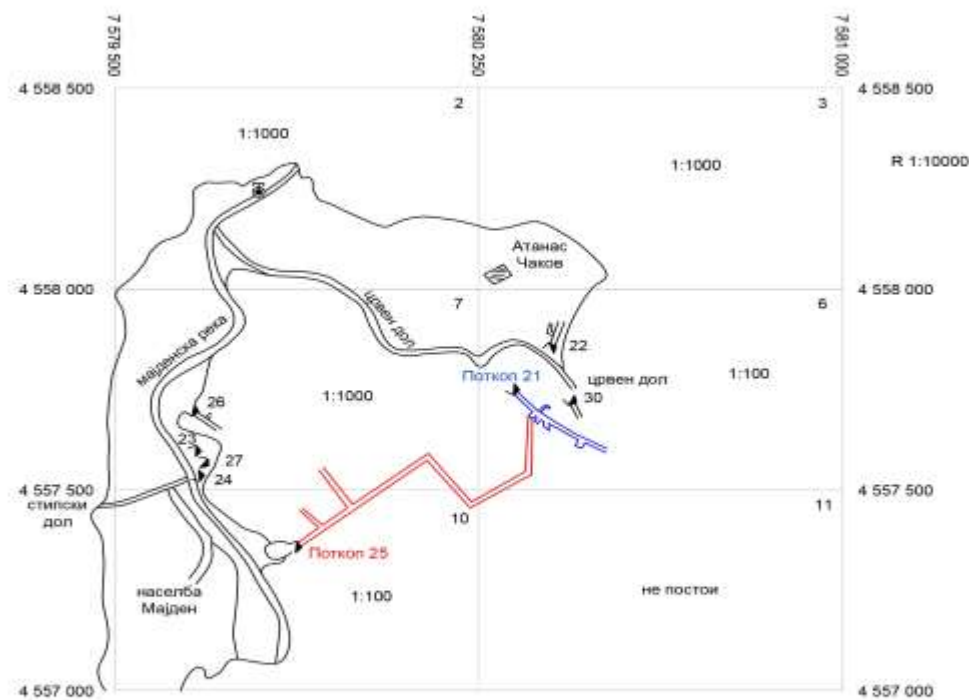
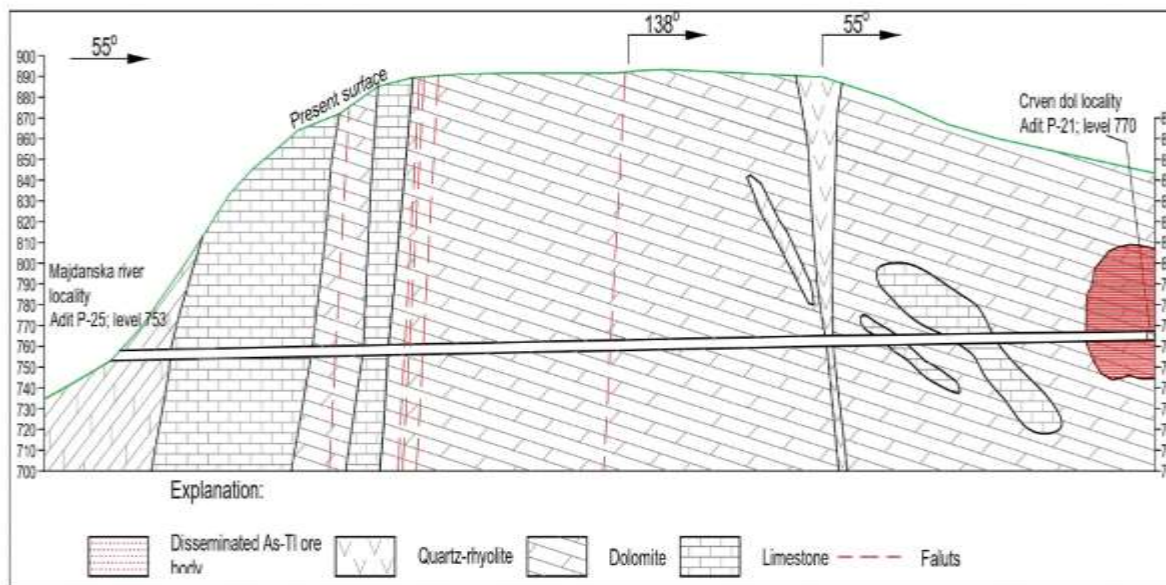
MINERALIZATION IN CRVEN DOL



ADIT 25, NEW LOCATION FOR LORANDITE



ADIT 25



- THANK YOU