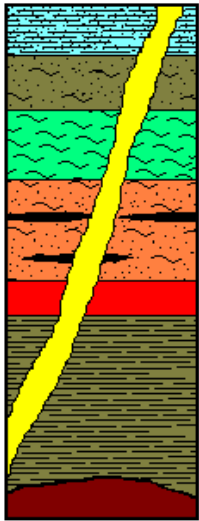


Homestake Geology

Proterozoic Stratigraphy



- Grizzly Formation - Metagraywacke, sericite-biotite schist
- Flag Rock Formation - Biotite-sericite schist, graphitic phyllite
- Northwestern Formation - Biotite-qtz-sericite-garnet schist
- Ellison Formation - Quarzites, Sericite-biotite schist and phyllite
- Homestake Formation - Grunerite/Siderite schist, chert
- Poorman Formation - Well-banded sericite-biotite carbonate phyllite
- Yates Unit - Hornblende-plagioclase schist

Rock Properties

(psi)	Formation			
Property	Homestake	Ellison	Poorman	Yates
C ₁	20,150	13,620	11,340	22,000 to 31,000
C ₂	11,550	10,000	11,410	
C ₃	13,270	12,270	8,150	
T ₁	1,380	2,990	2,350	
T ₂	1,140	820	590	
T ₃	1,920	1,910	1,650	

Notes: 1 and 3 directions are parallel to the schistosity.
2 direction is perpendicular to the schistosity.

In-situ Stress Estimation (ref. NIOSH)

$$\sigma_v = 1.25 h \quad (\text{vertical psi})$$

$$\sigma_{h1} = 2,078 + 0.53 h \quad (\text{dip direction psi})$$

$$\sigma_{h2} = 121 + 0.55h \quad (\text{strike direction psi})$$