

The objective of this assignment is to construct and validate a discrete event simulation of the haul network at open pit mine. The model will be used for 2 main applications:

- System optimization:
 - Appropriate number of truck and shovel to meet production rate
 - Effectiveness utilization of equipment

- Forecasting system performance:
 - Predicting production for mine planning
 - Haulage requirements with shovel fleet changes and open pit expansion.

Origin	Destination	Total distance(m)	Climb(m)	Ramp length(m)	Flat distance(m)	Approximate haul time(min)*
Cut 1	Stockpile	2100	250	1350	500	12.55
	Waste dump 1	1100	280	620	200	9.01
	Crusher	2400	250	1350	800	14.17
Cut 2	Waste dump	800	150	530	120	5.28
	Stockpile	1600	130	1100	370	11.05

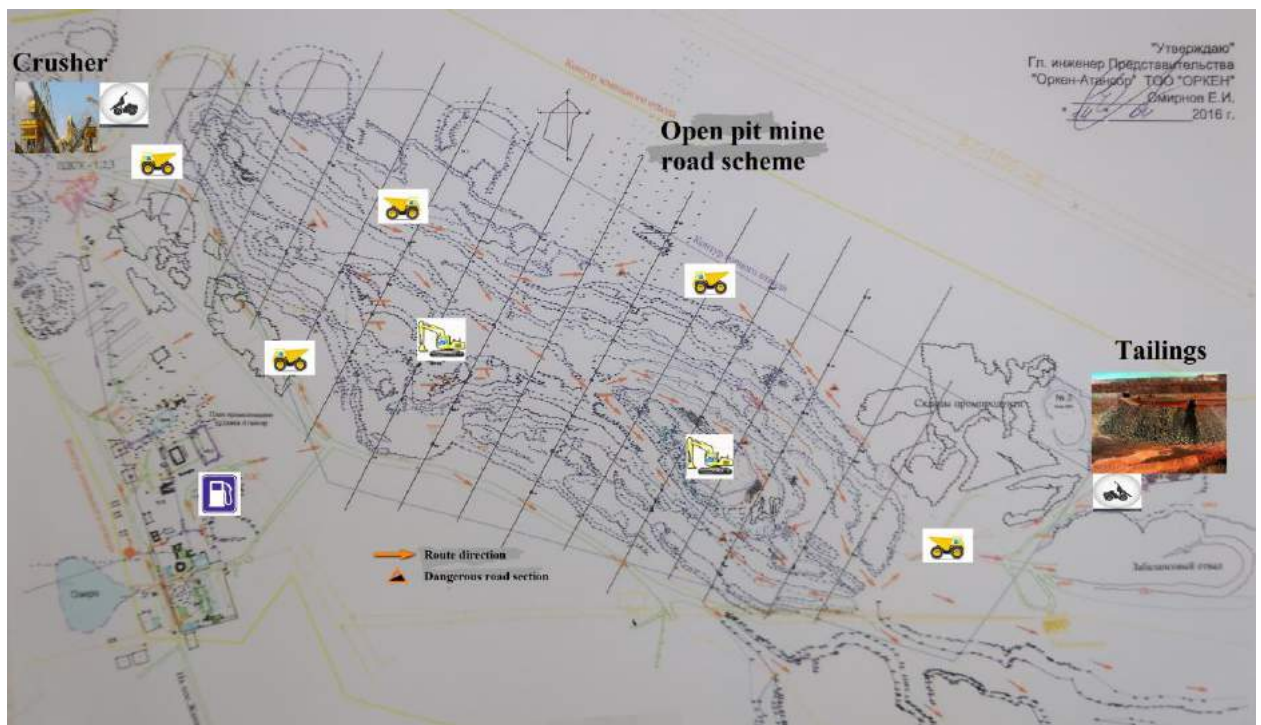
Haul time table.

Machine	Model	Capacity
Hydraulic excavator	Komatsu PC750- 7	3.4 m3
Hydraulic excavator	Komatsu PC1250- 7	6.5 m3
Rear dump truck	HD405- 7	45 m3
Rear dump truck	HD405- 7	45 m3
Rear dump truck	HD405- 7	45 m3
Rear dump truck	HD405- 7	45 m3
Rear dump truck	HD405- 7	45 m3
Rear dump truck	Scania G440	30 m3
Rear dump truck	Scania G440	30 m3

Load and haul equipment.

	2014	2015	2016	2017	2018	
ore	900 000	1 000 000	1 100 000	1 400 000	1 650 000	tonnes
waste	3 000 000	3 300 000	3 500 000	4 000 000	4 500 000	tonnes
ratio	3,3	3,3	3,1	2,8	2,7	tonnes
total	3 900 000	4 300 000	4 600 000	5 400 000	6 150 000	tonnes
month	325000	358333	383333	450000	512500	tonnes
day	10833	11944	12778	15000	17083	tonnes
shift	5417	5972	6389	7500	8542	tonnes
hour	492	543	581	682	777	tonnes

Production rate table



Loading average cycle time – 50 sec

Dump time – 170-180 sec

Average speed 19/21 km per hour