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MATLAB  
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( ) Soumis Elbrond

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( ) Lizotte

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( ) Xi

Temeng

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Chung

$$MinTruck : \sum_s \sum_d \sum_g K(g)X(s, d, g) \quad (1)$$

Subject to:

$$V_0 + H[V_{Truck} - V_{Extraction}] \geq V_{Min} \quad (2) \quad Chung$$

$$V_{Truck} = \sum_s \sum_d \sum_g \frac{60}{\tau_0(s, d, g)} L_0(s, d, g)X(s, d, g) \quad (3)$$

$$d = Waste Dumps, H \sum_s \sum_d \sum_g X(s, d, g) \times V_g \geq D_w \quad (4)$$

$$\sum_d \sum_g \frac{60}{\tau_0(s, d, g)} \bar{L}_0(s, d, g) \leq C_{shovel} \quad (5)$$

$$\sum_s \sum_d X(s, d, g) \leq R(g) \quad (6)$$

$$X(s, d, g) \geq 0 \quad (7)$$

$g, d, s$   
 $K(g)$

$X(s, d, g)$

$\tau_0(s, d, g)$   $L_0(s, d, g)$

$s$

$g$

$V_0$   $d$

$V_{Extraction}$   $V_{Truck}$

$V_{min}$

$C_{shovel}$

$D_w$   $s$

$R_g$

$H$   $g$

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( Chung )

$$\text{Min} \sum_{i=1}^n \sum_{j=1}^m \sum_{k=1}^q C_k X_{ijk} t_{ijk} + C_k P_{jik} t_{jik}$$

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- $j \quad i \quad k$  :  $X_{ijk}$   
 $i \quad j \quad k$  :  $P_{jik}$   
 $j \quad i \quad k$  :  $t_{ijk}$   
 $i \quad j \quad k$  :  $t_{jik}$   
 $k$  :  $C_k$   
 $n$   
 $m$   
 $q$
-

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(  $P_{jik}$   $X_{ijk}$  )  
(  $t_{jik}$   $t_{ijk}$  )

$$\sum_{j=1}^m \sum_{k=1}^q V_k X_{ijk} \leq S_i \quad i = 1, 2, \dots, n$$

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$$\sum_{j=1}^m \sum_{k=1}^q V_k X_{ijk} \geq rS_i \quad i = 1, 2, \dots, n$$

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:

i :  $S_i$

: r

k :  $V_k$

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$D_j$

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$$\sum_{i=1}^n \sum_{k=1}^q V_k X_{ijk} \leq D_j \quad j = 1, 2, \dots, m$$

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$$\sum_{j=1}^m \sum_{k=1}^q X_{ijk} = \sum_{j=1}^m \sum_{k=1}^q p_{jik} \quad i = 1, 2, \dots, n$$

$$\sum_{i=1}^n \sum_{k=1}^q X_{ijk} = \sum_{i=1}^n \sum_{k=1}^q p_{jik} \quad j = 1, 2, \dots, m$$

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$$X_{ijk} \geq 0$$

$$P_{jik} \geq 0$$

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$$N = \left[ \sum_{i=1}^n \sum_{j=1}^m \sum_{k=1}^q \frac{X_{ijk} (t_{ijk} + t_{L_{ik}} + t_{W_{Li}}) + P_{jik} (t_{ijk} + t_{W_{Dj}})}{60 \times u} \right] + 1$$

(

( )

i k

j

:t<sub>L<sub>ik</sub></sub>

:t<sub>W<sub>Li</sub></sub>

:T<sub>W<sub>Dj</sub></sub>

:u

$$\sum_{i=1}^n \sum_{k=1}^q X_{ijk} \times V_k \geq \frac{V_{\min} - V_0}{H} + V_{\text{ext}} \quad j = 1, 2, \dots, N_{\text{crusher}}$$

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$$H \sum_{i=1}^n \sum_{j=1}^m \sum_{k=1}^q X_{ijk} \times V_k \geq W \quad j = 1, 2, \dots, N_{\text{Waste Damp}}$$

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:V<sub>0</sub>

:V<sub>min</sub>

:H

:V<sub>ext</sub>

:W

ARENA

TALPAK

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MATLAB

$$\sum_{i=1}^n \sum_{k=1}^q V_k X_{ijk} \times \alpha_i = \alpha_j \sum_{i=1}^n \sum_{k=1}^q V_k X_{ijk} \quad j = 1, 2, \dots, N_{\text{crusher}}$$

( )

i

:α<sub>i</sub>

j

:α<sub>j</sub>

( )

P&H	P&H	P&H	P&H	P&H	P&H	P&H	
							(ton/h)
							(ton/h)
							(ton/h)
	/	/	/	/	/		(%)

SCMD  
File

### SARCHESHME COPPER MINE DISPATCHING

Options

Date 30-Aug-2005

Dispatcher  
Chehregani

Crusher Point  
0.9

**SHOVELS**

On/Off      On/Off

1       6

2       7

3       8

4       9

5       10

**Result**

Crusher 3    11    26    31

Shovels	3	11	26	31
1	0	0	0	14
2	0	0	0	0
3	14	0	0	0
4	0	0	0	0
5	6	0	0	0
6	10	0	0	0
7	14	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	10

**DUMPS**

On/Off

Crusher

3

11

26

31

**TRUCKS**

On/Off

1


2

3


DISPATCH SOLVE

Assignment

Report



University of Tehran



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$C_k$

...

$C_k$

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M/GI/1

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$$\mu = 1/(t_l + t_m)$$

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$$\theta = N/(t_w + T)$$

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:  $t_l$

:  $t_m$

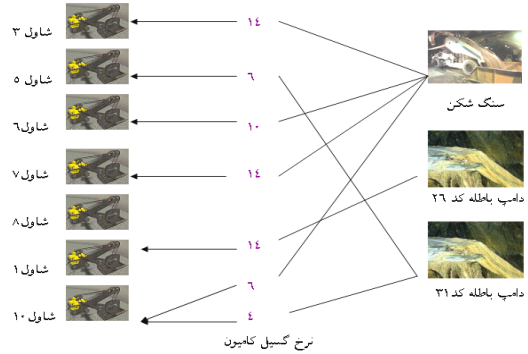
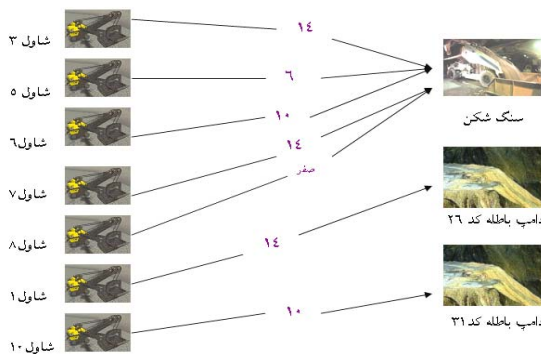
: N

:  $t_w$

: T

Result						
X	Crusher	3	11	26	31	
Shovels	1	0	0	0	14	0
Truck	2	0	0	0	0	0
1	3	14	0	0	0	0
2	4	0	0	0	0	0
3	5	6	0	0	0	0
	6	10	0	0	0	0
	7	14	0	0	0	0
Show Result	8	0	0	0	0	0
	9	0	0	0	0	0
	10	0	0	0	0	10

Result						
X	Crusher	3	11	26	31	
Shovels	1	0	0	0	14	0
Truck	2	0	0	0	0	0
1	3	14	0	0	0	0
2	4	0	0	0	0	0
3	5	0	0	0	0	6
	6	10	0	0	0	0
	7	14	0	0	0	0
Show Result	8	0	0	0	0	0
	9	0	0	0	0	0
	10	6	0	0	0	4





$$t_w = \theta(1 + \mu^2 \sigma^2) / (2\mu(\mu - \theta)) \quad ( )$$

$$N = \theta T + \theta^2 (1 + \mu^2 \sigma^2) / (2\mu(\mu - \theta)) \quad ( )$$

$$(\sigma^2) \quad 1/\mu$$

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- 1 - Real-Time Dispatching
  - 2 - WABCO
  - 3 - DRESSER
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