

# INTRIGUE

## CASE STUDY PROBLEM STATEMENT

### PROBLEM ON DEEP OPEN CAST COAL MINE

- 1) Geological reserve= 516MT
- 2) Minable reserve = 452MT
- 3) O/B removal during entire life of mine = 2368Million m<sup>3</sup>
- 4) Production per annum = 15MTPA
- 5) Ultimate depth of mine= 250m from surface level
- 6) Average gradient of seam= 4 degree (towards East)
- 7) Coal Seams = Three, Seam IV, Seam V, Seam VI.
- 8) Average thickness of seam - IV = 2.0m  
seam - V = 7m  
seam - VI = 8.5m
- 9) Mining lease area (Coal bearing area) = 2388 Ha
- 10) Elevation of surface = 505m to 569m (increasing towards East)
- 11) Average stripping ratio = 5.24 m<sup>3</sup>/Tonne
- 12) Method of mining - Mechanized
- 13) Average strike length= 6.08km
- 14) Average dip-rise length = 4.5km
- 15) Normal rainfall = 1300mm
- 16) Expected life of mine = 30 years

### CONSIDERING

- Average no. of working days = 330 days/year
- No. of shifts = 3 shifts/day
- Working hours per shift = 8 Hours
- Bench height for O/B= 6m and 10m
- Bench height for coal = 10m or as the seam thickness

- a) Suggest a method of work in open cast coal mine.
- b) Design mine pit as well as dump slope considering geological parameters of rock and dump including hydro-geological and weather conditions to ensure stable pit and dump profile on long term basis.
- c) Design of ultimate pit slope and dump slope.
- d) Suggest method of monitoring slope stability based on risk assessment of the impending danger of slope instability for a timely withdrawal of men and machinery from the affected area of the mine.

